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Homer as an Architect: The Palace of Ulysses at Ithaca.

THE agreeable occasion for the present article is the reception of a *brochure* from our friend, M. Charles Lucas, of Paris, an honorary member and correspondent of the Royal Institute of British Architects. The subject is "Architecture in the Time of Homer, especially as illustrated by the Poet's Description of the Palace of Ulysses," and is extracted from the "Annales de la Société Centrale des Architectes." M. Lucas adverts to the study of the subject having occupied and consoled the leisure which for years was enforced upon French architects by the consequences of a great political reverse; but the study bore its fruit under pleasant circumstances when the results were brought before the profession at a congress of French architects, and in the hour intermediate between a distribution of rewards and a "confraternal" dinner. The style of the author has all the gracefulness to which the French language seems to lend itself as naturally as to lucidity of exposition, and exemplifies the amenities not only of professional but of international intercourse. M. Lucas refers to articles of the *Builder* on the same subject, June, 1870 (quoted and translated pp. 14, 37, 39, 41, 48, 51) with a frankness and cordiality which must not be allowed to mislead his readers as to the genuine independence of his own judgment and studies.

In an introductory notice the author gives particulars of a primitive house, excavated, "like a prehistoric Pompeii," in the volcanic island Therasia, in the Greek Archipelago. It was built very rudely of irregular blocks of lava, with mud only for mortar,—such things have been known even in historic times; some rooms had upper stories, but all the beams employed were undressed, retaining even the bark. The cut of the more important,—most important,—gate of Mycenæ from another work has the unsatisfactoriness of so many other representations. We would fain take this opportunity to urge that an accurate cast of this monument should be preserved in every architectural museum that pretends to instruct in the history of our art. The mouldings even of the pillar itself, as well as of the members above and below it, are given so differently in different engravings that some must be miserably falsified, and all uncertain. Not merely the degree of diminution of the shaft from above downwards, but even the fact of any diminution at all is placed in doubt by some drawings. It seems to be much slighter in reality than usually represented, and that in consequence of a peculiar optical illusion which few are aware of. The nature of this will become evident to any one who will hold up before him the drawing of even an Ionic column upside down: he will be surprised at the greater quickness with which the girth of the column will then seem to expand upwards. The same effect, let the natural philosophers and opticians explain it, will be experienced when the Ionic column of a portico is looked at from above,—let us say from the box-seat of a coach. If we may trust the profile given in a number of the *Archäologische Zeitung*, the mouldings of the capital are exactly those of the Attic base reversed; upon the verification of this more historical inferences depend than affect the development of architecture alone. It is time, however, to return to our proper subject. M. Lucas engraves three schemes for a restored plan of the palace of Ulysses. One is by Canina; another by Lechevalier, who, in 1829, writing under the pseudonymn of Constantine Koliades, revived an ancient paradox of the identity of the poet and his hero,—a Homer-Ulysses. Both these work upon the indications, reported by Sir Wm. Gell, of ruins upon Mount Aito, in Ithaca. M. Lucas justly styles these indications both scanty and questionable, and valueless as a check upon the descriptions by Homer. In fact, it cannot be too distinctly recognised that the poet gives such very inaccurate bearings for the island of Ithaca itself, that he could neither have been familiar with it personally nor have owed his information to others who were so. This state of the case will be found fully established in Bunbury's recent "History of Ancient Geography," a thoroughly standard work, if the Victorian era has one to boast of. The third plan, which has the advantage, at least, of being unhampered by restricting local conditions, is by H. Rumpf, and illustrated a Latin Essay, which we have not seen, published at Giessen in 1858.

What has to be treated of is, in fact, the conception of the poet. This, doubtless, may have been quite at variance with the real architecture of the remote epoch professedly dealt with, and also with the art as contemporary with the poet; but to this latter it must necessarily have been indebted for suggestions more or less extensive, as it must have been, in some degree, to his familiarity with traditions and monuments which, in his ancient days, survived from days that were still more ancient. In any case we are quite justified in expecting that his ideal conception will prove to have been both self-consistent and complete. It is a frequent experience of analysts of superior works of fiction, to come upon casual indications that an author had realised in his mind a scheme of local details or personal relations more minutely and scrupulously made out than he ever had occasion to define for the guidance of his readers. M. Lucas, unfortunately, does not supply an engraved plan to illustrate his own exposition; pursued, however, as it is, with excellent consistency and careful references and citations of the poem, it invites recurrence to the subject, and a summary of general results. It is to do honour to the candour of a *confrère* from beyond that Channel which now is a high road of happy intercourse between nations which it was long chiefly valued for dividing, that we reproduce his note of cordial acknowledgment (p. 37):—"C'est surtout dans cette troisième partie de notre travail (Le Palais d'Ulysse) que nous avons pris pour guide la savante étude parue dans le journal Anglais, *The Builder*; et nous sommes heureux de reconnaître que dans certains passages, nous n'avons fait que traduire et reprendre, avec l'archéologue Anglais, auteur de cette étude, le texte de l'Odyssée," &c.

If Homer assigns to Ulysses a palace in many respects of primitive simplicity, and even rudeness, it was not by any means because imagination was wanting,—or, it may be, familiar models either,—for furnishing his hero with a superb and luxurious dwelling. His descriptions of the palaces of Alcinous and Menelaus might have satisfied the author of "Lothair" for unsparing magnificence, and the employment of metals in their solid architectural enrichments is such as the so-called Treasury of Atreus at Mycenæ proves to have been suggested by executed works.

The ancients amused themselves by ungallantly reckoning up the age of the wife for whose sake Ulysses was fain to desert the society of goddesses. Ovid, from the depths of his cruel exile, though he felt its cruelty severely in the rupture of his own affectionate domestic relations, could murmur that the much-enduring man had, after all, no such hard lot in his separation,—*An grave sex annos teneram fovisse Calypso?* But the strong home-feeling of Ulysses is the great redeeming charm of a character which does not otherwise shine by the amiable virtues; and this is set forth in most engaging relief by his yearning for a homestead so contrasted with splendours and luxuries which he can despise for the sake of it, keen as is his eagerness for wealth in any form, and indifferent as he usually is as to how he comes by it. There is no sea-risk that he is not willing to incur, no perils afterwards that he cares to shun, if only he may see once again the smoke ascending from his native roof.

Let us call again to mind the general character and scheme of this dwelling so ardently longed for, as they come before us vividly in the revival of M. Charles Lucas.

The home of Ulysses was a combination of palace, manor-house, and farm-house, in relation to which the homestead to which his aged father has retired is very much that of the home farm. His wealth, apart from a store of precious and useful metals and arms,—plunder obtained in war and athletic prizes,—consists very largely in stock,—beeves, swine, and goats; and with these we must include slaves of both sexes, captured or purchased. The account which Eumæus, the faithful swineherd, gives of his master's stock, both on the island and the main-

land, is extraordinary; we may safely say extravagant, for allowance has to be made for an old servant's unscrupulous concern for the dignity of the family. We are only brought into communication with swineherds, goatherd, and herdsmen; but there is clear reference to a number of men that might have mustered, if time allowed, from those engaged in cultivating the large royal demesne.

Outside and in near connexion with the palace was a prepared and levelled platform adapted for athletic but also sedentary games, and a general lounging-place: this was an arrangement which, treated architecturally, became either the Hellenic Palæstra or else a *lesche*; but it is clear from Homer's allusion to the beauty of the chorus or dancing place which Hephæstus constructed for Ariadne at Cnossus, that he was already familiar with application to such sites of study and embellishment at establishments more luxurious than that of the Ithacan prince.

The entire palace is contained within an outside wall, crowned with a coping where it is single, and of such strength and height as to secure inmates and contents from intrusion and violence. The main, and apparently the single, entrance into the enclosure, was through doors capable of being thoroughly secured, and wide enough to admit cattle and chariots; on the same front, exterior to the general wall, was some sort of porch or portico.

This entrance admitted to the *aule*,—a spacious courtyard, where the cattle brought for slaughter could be tied up or turned loose for a time; stalls and stables, when such were required, had their position here, but consistently with the ruggedness ascribed by Telemachus to the surface of his native island, there is no mention of the use of horses in Ithaca. This seems to have been the position of the outhouses, where the female servants were employed laboriously at the hand-mills to provide a supply of flour for the household. The droppings of the cattle removed from the *aule* were heaped outside the building, but not very far away, to await distribution over the estate. Lying neglected and weak upon the dunghill here, close to the gates, was the dog Argus, as Ulysses approached his home after twenty years' absence; the creature recognises him, disguised as he is, and, indeed, transformed in personal appearance by the goddess Athene.

"He knew his master,—knew and strove to meet,—
In vain he strove to crawl and kiss his feet;
Yet, all he could, his tail, his ears, his eyes,
Salute his master. . . . . .
The dog whom fate had granted to behold
His lord when twenty tedious years had roll'd,
Takes a last look, and, having seen him, dies,
So closed for ever faithful Argus' eyes!"

In the centre of the *aule* was an altar dedicated to Zeus as guardian of an enclosure. Unfortunately, no hint occurs to determine a special orientation for the building, which might explain an epithet, implying warmth, given to a corridor or open lean-to, which seems to have formed a covered way along one if not both sides of the *aule* from the main building to the outer doors. This *aithousa*, in any case, had greater importance on the side opposite the outer doors, and on each side of that which admitted into the dwelling proper.

This second entrance on the main axis of the building is identified by references to its threshold as of wood, in contrast to another, which is of stone or marble, in the further interior. Passing through it, the first *megaron*, or large apartment, was reached,—a spacious hall, and the ordinary haunt of the men, at meal-times especially, and otherwise. It was of an extent to accommodate very considerable numbers,—accepting the descriptions submissively, we may say some scores. On the occasion of a meal, seats and separate movable tables were arranged along the opposite sides of this for the guests; a fire could be lighted in it, of which the smoke escaped through an opening among the blackened rafters of the roof. How this roof was constructed does not appear; no occasion occurs for the mention of any pillars; one support is alluded to, by which Penelope takes her stand, in a manner that almost implies that it was as single as the central shaft of a chapter-house, but this is at the further end of the apartment. It does not even appear that the floor was either boarded or paved; indeed, there are indications that it was at best of beaten earth, capable of having a trench dug in it and to be cleansed by scraping with hoes. We hear nothing of a separate kitchen for the preparation of the flesh which is so freely consumed, with no mention of vegetables, either fresh or cooked; and the newly-flayed hides of the slaughtered beasts are lying about near the seats, where wine is being quaffed out of golden goblets. But it would be very rash to assume that the manners and customs of the poet's own age or a preceding are accurately represented by the picture which it suited his poetical purpose to compose.

This principal hall of the men was central between the *aule* and the more private and the peculiar feminine division of the house beyond. A central doorway, with a stone threshold, admitted to these apartments, of which the principal is again called a *megaron*,—a large work-room in which the numerous female servents were occupied with manipulation of wool, and where Penelope herself occasionally applied to the distaff and spindle. The best bedroom of Ulysses was on the ground-floor in this division, and there were underground storerooms for wine, oil, and meal, of which a discreet female housekeeper had charge. A yard of sufficient extent for a considerable number of poultry to be kept, was also within the enclosing wall, and answered at this extremity of the building to the *aule* at the other. The chamber usually occupied by Penelope is on an upper floor on this side, and in such proximity to the hall of the men that she has no difficulty in overhearing what goes on there; the locked treasury of Ulysses is also on this story. But between the enclosing wall and the lateral walls of both the great apartments, there was arranged, on one side at least, a service-passage of indeterminate breadth, with stairs, to rooms above it. This could be entered from the further end of the *megaron* of the men, and gave an issue into the *aule* near the door with the "wooden threshold." There was also access to it from the women's division, who were thus enabled to pass by the side door into the *megaron* of the men, which they put in order after an entertainment, and also to reach the *aule* and so leave the palace as required without traversing the central hall. They could also pass by it to such upper rooms as the armoury and others, for domestic purposes. Telemachus, for example, is lighted by his old nurse to his chamber, in a position whence he could look down over the courtyard and the entrance.

The general distribution has much agreement with that of the Greek house as described by Vitruvius.

When the seeming beggar, Ulysses, is pitted by the suitors against the beggar Irus in a boxing match, the fight "comes off" in the middle of the *megaron*, and the victor drags the vanquished bully by the leg through the vestibule, across and out of the *aule* and sets him up against the enclosing wall outside. When the crisis of the poem is at hand, and Ulysses is about to set upon the suitors, he provides for shutting off the women's apartments by the indispensable help of the housekeeper, as they have to be secured from within; and the herdsman who is with him is sent to preclude the possibility of interruption from without, by barricading the main entrance into the *aule*. Then he takes his stand with the fatal bow on the wooden threshold to defend the passage from the great hall into the *aule*, and at the same time to command the exit by the service passage which was close by; and then the massacre commences.

So it is that we have had satisfaction in going hand-in-hand with M. Charles Lucas in verification for the most part, of the results which he obtains by following the incidents of the Odyssey in order, and combining scattered allusions, epithets, and phrases. Like a genuine student, he does not withhold from inviting excursions along the margin of his main subject into collateral topics of illustration more or less immediate; these invitations are ever rife in classical antiquity, for the genius of the Greek asserted its originality in every art, and the same spirit which animated the literature was evidenced harmoniously both in architecture and in graphic design. In obedience to this impulse we are welcomely presented with a reproduction of the subject on an antique mirror representing an interview of Ulysses and Penelope. This is reproduced from the publication of the German Archæological Institute of Rome, but with the title there assigned and summary of explanation which miss the intention of the ancient artist. It is called "Ulysses relating his Adventures to Penelope," and as the dog Argus is introduced, which, according to the Odyssey, dies before this meeting, it was assumed that the artist followed one of the many lost cyclic poems. But this is to employ a random supposition with the effect of defrauding the designer of the mirror of the credit of an original poetical combination of considerable merit. He clearly had in his mind the incident in the Odyssey when the disguised Ulysses, his fictitious narrative of adventures already concluded, assures Penelope that her husband will return forthwith, while she, on her part, expresses all but absolutely her failure of hope. Ulysses wears the conical sea-cap which he appears in on a coin of Ithaca that M. Charles Lucas engraves, and that Flaxman has made familiar to us. Various disproportions apart, his attitude and gesture, as with fixed gaze he rests his right elbow firmly on his raised left thigh, and extends his index finger in a line with his profile, are admirably invented as expressive of firm conviction and positive assurance. Penelope stands opposite, erect, with folded arms, and one hand to her chin, wrapt in thought, absolutely reserved, if not absolutely incredulous. A Medusa head with a crescent, between the two figures, is a manifest symbol of the monthly term within which Ulysses limits the fulfilment of his assurance:—

"When the pale empress of yon starry train,
In the next month renews her faded wane,
Ulysses shall assert his rightful reign.
What thanks! what boon! replied the Queen, are due,
When time shall prove the storied blessing true?
My lord's return should fate no more retard,
Envy shall sicken at thy vast reward;
But my prophetic tears, alas! presage
The wounds of Destiny's relentless rage,
I long must weep nor will Ulysses come."

The artist of the mirror happily contrives to bring into one scene a contrast which the poet trusts to us to appreciate as presented in successive incidents. He introduces the dog Argus still alive, between the disguised husband and unconscious wife; if, indeed, unconscious, for the ancients disputed whether Homer did not intend us to surmise that the discreet Penelope suspected, or even was confident of more than she avowed or signified. While Penelope is standing almost statue-like, in true suspense or obstinately reticent, the dog, with infallible instinct, with ears declined and curving tail, looks up eagerly to his master, and even strives to attract his attention, fawning upon him with one uplifted paw. The cautious prudence of Penelope could scarcely be brought into better relief,—of the wife who at last, only at last, allows her hopes to become entire and affectionate confidence, when Ulysses intimates his knowledge of their private token. This was the absolute immovability of their bedstead. When Ulysses erected his palace himself, with the skill which he boasts of in all the useful arts of peace as well as of war, he roofed in his nuptial chamber about an olive tree which was growing on the site, and then, on felling it, had left the stump and framed into this the concealed woodwork of his couch, a secret known only to himself and wife and one confidential attendant.

It is difficult to return to the poetry of Homer at any time without lingering over it, and if this is ever excusable it is under the sympathetic circumstances which have prompted the present article.

PATTERN-BOOKS.

The production of books which are intended to supply patterns of work or of design for the use of those who cannot produce their own designs seems to be a type of industry that is much on the increase. Under the general term "pattern-books," which we admit we are here using in a sense of our own, we include all those publications which present collections of designs which have not been executed, but which are published ostensibly for people to "crib" from. Very often the real and primary motive of publication is to furnish a kind of genteel form of advertisement of their author, but the professed end, at all events, is that which we have indicated.

How far such publications are really of value depends partly on the class of object with which they deal. When they are designed to illustrate what is purely artistic work, it appears to our judgment that such books are entirely useless, and even injurious, except in the purely business light of making known their author's name. In any other respect the only result of their use, if they are used, is to encourage the habit of repeating borrowed designs without thought or study. The artisan who uses such a book is merely mechanically copying designs which, even if good in themselves, are not designed for the situation on which he uses them, and the

use of which can hardly be said in any way to stimulate his own taste or knowledge. It is merely parrot work.

The production of works of this kind is, in fact, an indication of a radically wrong notion as to the production of ornamental design. It assumes that certain forms are in themselves art, that they can accordingly be reproduced as art. This, of course, is absurd. Artistic design consists in the exercise of individual thought and taste in the application of well-chosen forms to decorative effect. But to publish the results of such thought for others to use over again is simply to vulgarise them. The idea that decoration can be of any value when borrowed second hand out of a book in this way, is no more reasonable than to suppose that a man can be a good orator by borrowing from a book of selections from another man's speeches.

We do not, therefore, regard such publications with any particular favour, though we may distinguish between the relative qualities of one and another. The last contribution to the list comes to us from Birmingham,* in the shape of a work in four parts (two only are before us) bearing the fashionable title of "Motifs for Decoration," and consisting of plates of designs mostly founded on Japanese taste, or, in some cases, what we might call Japanese crossed with Gothic. The author's preface is amusingly unsophisticated. He says that, knowing practically the requirements and taste of the present period, he has adopted what appears to be the best method of drawing, in the various popular styles, so that, "with comparatively small artistic knowledge, the designs may be adapted to all processes." We had not read this sentence when we wrote the above introductory remarks; it certainly forms a singularly appropriate comment on them. Here is the absolute suggestion, in its naked form, that the decorations given are to supply the place of artistic knowledge, and to be reproduced in any material; quite ignoring the intimate connexion between decorative style and material. The author assumes in the first paragraph of his preface what is certainly not in accordance with facts. He says his aim has been to give a series of suggestions that will readily lend themselves to the various processes of art manufacture; that he has frequently felt the want of such suggestions; many of his friends have experienced the same deficiency. Why, there is actually a glut of "suggestions" for ornament of the very highest order in the ornamental work of the past collected in our museums, as well as in such great leading illustrative works as those of Owen Jones and others. Why did not the author publish accurate illustrations of existing ornamental work, and so do a real service to students by disseminating drawings of good work, of historical value, for the benefit of those who were out of the reach of museums? He would then have brought his readers into connexion with typical examples first hand. As it is, a large proportion of his examples are simply Japanese art at second-hand. If they had been careful copies of actual specimens of Japanese work they would have had a distinct and definite value, though a value which it is quite possible to overrate.

As to the actual merit of the illustrations, they are in a good and tolerably bold style of drawing, and in some cases are very effective. The circular panel with the bird (Plate IX.), for instance, is a good bold bit of drawing and design. But then this, and others that are also effective, are nothing but sham Japanese work. The author seems in some cases to have adopted the heresy which Japanese art has (whether logically or not) suggested to many designers in this country, of thinking that it is a good element in design to make everything look as accidental as possible. For instance, in Plate VI. there is a long strip of panel up the centre, with a small diaper on it and circular pateræ of different design placed on the diaper; the said pateræ all at irregular intervals, and all placed so that some part of the disc, less or more, is cut off by the border of the panel. To call this sort of thing "design" is utterly absurd; it is the ignoring of design. "Design" implies contrivance and adaptation, not the complete ignoring of anything of the kind. Another fault is want of homogeneous style; as in Plate II., where sunflowers are decoratively treated, the flowers are conventional, and the leaves nearly natural. This is a fatal error in design. Whatever degree of conventionalism be adopted, it should be carried consistently throughout every detail.

* "Motifs for Panel and other Decoration." By John Ward. Birmingham, 1881.

There is another kind of pattern-book which is more useful,—that which combines constructive detail with design. To publish illustrations of the method of constructing and putting together any kind of work, decorative or practical, is always calculated to be useful. Practical knowledge can be imparted by examples; power of design cannot,—not in the same sense, at least. This element in pattern-book making is to some extent illustrated in a portfolio, rather than book, of very awkwardly large sheets, which comes to us from across the water, from Bridgeport, Connecticut, under the title of "Palliser's Useful Details."* This is a joiner's book, and gives a great amount of details of woodwork, designs for gates, railings, &c., accompanied by a good deal of practical detail, such as handrailing diagrams, &c., and nearly everything shown has its section and constructive detail appended. There is nothing to remark on in the constructive portion, which seems to present the ordinary details of joinery, neither better nor worse than are usually followed in the ordinary routine of work; in one or two places there seem to be oversights or omissions, such as the want of throating to a window-sill, unless it is that the drawings, which are rather thickly and roughly printed, do not show it clearly. A good many of the designs, we are told, have been actually carried out, which, of course, actually places the book in a different category from that of mere suggested designs; there is, for example, a plan of the arrangement and constructive details of a shop, which occupies a whole sheet, and there are other such details which may fairly claim to be "useful." Still the object of the work, in the eyes of its producers, is mainly artistic, and in this sense it is rather significant in some ways. In the preface it appears that the aim of the author or authors is very ambitious. They propose to bridge over the gulf between the architect and the inartistic builder and workman by inoculating the latter, so to speak, with the virus of architectural taste. They feel that, owing to the great changes which have taken place in architectural taste "during the last three or four years," the architect and builder have been thrown more apart, and the latter does not at once understand the new ideas of the former, and thus is not only unprepared to carry them out properly, but often is not able to correctly estimate the cost of such new and unaccustomed work, and either estimates too low or too high. Now, when we read this, and we learned also from another paragraph of the preface that it was the special desire of the authors and publishers to keep pace with the times, we turned with some interest to the illustrations to see what was the new taste with which the architects of Connecticut had been endowed. And behold! we find all our old friends of fifteen or twenty years ago in England; the cunningly-chamfered posts, the panels and brackets with patterns pierced in them in round holes and otherwise; the chamfered boarding placed diagonally across the doors, and all the things which characterised average modern Gothic woodwork in this part of the world nearly a quarter of a century ago. Thinking of the phrase "the last three or four years," we turned to the title-page for the date of the book, thinking it was possibly an old work surreptitiously put upon us for a new one; but no, there was the date "1881" plain enough; the only thing that seemed to offer any solution of the puzzle was the date of the month, "First of April." Seriously, however, we presume the conclusion must be that it takes from fifteen to twenty years (allowing for "the last three or four years") for fashions in taste to travel from England to Connecticut, so that about the year 1891, or from thence to 1895, we may expect a book of designs in Queen Anne style from the same place. Far be it from us to assume that our cousins in the States should do nothing in architecture but imitate our fashions, we would rather urge them to avoid mere imitation; but at the same time it seems to be the fact that they do imitate us, and most of the books of designs or buildings that come over to us from the States consist of repetitions of English architectural taste. It is perfectly natural, it is according to the universal course of architectural history in the past, that a race who migrate to a new country should carry with them the architectural traditions of the old country; but then they should leave themselves free to make their own start from these. They should not keep looking back to the old country to note all the changes in fashion there and follow them. In the illustrations we are speaking of there are certainly forms that are new in a sense; but, unfortunately, they are by no means admirable, and are just the kind of things that are produced in the effort to be novel for the sake of novelty, which is always a dangerous experiment.

* Palliser's Useful Details: Vol. I. Palliser, Palliser, & Co., Bridgeport, Connecticut. 1891.

OBSERVATIONS ON BANKRUPT ARCHITECTS AND THE RIGHTS OF CREDITORS.

It is the lot of every profession for some of its members from time to time to find themselves involved in money difficulties, and architects are not an exception to this general rule. Sometimes an inability to meet in full the demands of creditors may arise from misfortune; sometimes, and more often, from carelessness in the conduct of business. Indeed, the larger does the experience of a man who mixes much among all classes of the community become, the more does it become evident that but few of the so-called pecuniary misfortunes which occur are the results of the inevitable. Want of foresight, a reckless independence of opinion, a desire to make money quickly and not surely, and a want of self-restraint, are the too general causes of pecuniary losses. However, be that as it may, we are now concerned chiefly with facts of a business-like character, and not with the causes of men's misfortunes, and it is in regard to certain facts of considerable importance to architects and their creditors that we now desire to say a word or two. The question, briefly put, to which we wish to direct our readers' attention, is the position of an uncertificated bankrupt architect in relation to his earnings, and this point has been brought somewhat prominently forward of late through the litigation arising out of the construction of a new theatre in the Strand, and especially by the recent case of Emden *v.* Carte, which was tried before Mr. Justice Fry. The exact point arose in this case, and therefore it may be considered as the latest authority which bears on this question, and directly affects the architectural profession. Mr. Emden, an architect, to touch briefly on the facts, brought an action against Mr. Carte in respect of an agreement to employ him as an architect; the main claims were a sum for remuneration for work and damages for a wrongful dismissal, and at the time when the action was begun the architect was still an uncertificated bankrupt. The actual question was raised by an application on the part of the trustee to be substituted as plaintiff in the action in place of the architect.

Now, the legal rule upon this point is shortly this, that the trustee has not a right to the proceeds of a bankrupt's personal and daily labour, for that would be to deprive him of the means of existence. But though this rule is pretty clear on its face, when it comes to be more closely examined it will be seen not to be very easy of application. For what are the proceeds of a bankrupt's personal and daily labour, and what, strictly speaking, is this personal and daily labour? Thus, in one instance, a discussion arose in the courts as to whether a bankrupt or his trustee was entitled to the damages recovered by a newspaper editor for a wrongful dismissal, which certainly was money received in respect of the loss sustained from the breach of a contract in which the elements both of personal and of daily labour were present. In the present instance, the claim of the trustee was also held to be good against that of the bankrupt architect; for, said Mr. Justice Fry, "The conclusion, therefore, at which I arrive is this, that although the personal services of the architect were an inducement to the contract, the fruit of that contract in the way of remuneration or the right to damages for wrongful dismissal would pass to the trustee." And it must be observed that in thus delivering his opinion the judge is careful to insert the words "in the way of remuneration," showing that it was clearly his intention to lay down the rule that whatever an architect might earn by his daily labour in his profession became the property of the creditors as long as he remained an uncertificated bankrupt. Indeed, so far as the creditors are concerned, it would be a hardship if it were otherwise; for the architect's knowledge and professional skill are his capital as much as the actual cash or bills of the merchant, and were it otherwise an architect might become

bankrupt with but small inconvenience to himself. We are not now concerned with other businesses or professions than that of an architect, and, therefore, it is needless to go through the cases which have decided this question in regard to other trades and professions. Of course, a trustee could not perform the contract into which an architect may have entered, but as soon as the remuneration is received then it becomes the property of the creditors. The tendency of the law now is to limit the privileges of a bankrupt as much as possible, and therefore the fruits of personal and daily labour can now seldom escape from the pockets of the creditors, or, more strictly speaking, of the trustee.

SALTBURN-BY-THE-SEA.

One of the best known of the North-Country writers compared the old village of Saltburn to a dove's nest sheltering under the shadow of the ruddy cliffs that rise perpendicularly near it. But this was the ancient village, which had in the distant past a well-deserved reputation for smuggling. That reputation gave place a generation or two ago, as Redcar rose into local prominence as a health resort, to one of another order, for Saltburn became noted for its "fat rascals,"—certain savoury cakes which visitors failed not to appreciate. Slumbering under the shadow of the cliffs the hamlet dwindled, and it is only within the last score of years or so that the situation was appreciated as one of the finest on the north-east coast for a bathing-place. It was one of the directors of the adjacent line of railway who saw the eligibility of the place, and in the course of a few years the crest of the cliff was crowned by a stately hotel, terraces looked from the high ground across the North Sea, a little ravine to the south was turned into pleasure gardens, and rows of modest dwellings sprang rapidly up. Under the impulse of the great trading prosperity that set in in the north-east a decade ago, Saltburn, as the most commanding as well as the youngest of the watering-places of the north, grew rapidly, and bade fair to rival Scarborough. But when the wave of trade depression set in, its reflex action was speedily felt in the health resorts, and it is to that action that Saltburn, owes its unfinished look to-day. Through most of the months of the year it is "remote, unfriended," and "slow," and it is only in the autumn that it wakes up to that semblance of life which society deems good form. In contrast with its busy *bourgeois* neighbour, Redcar, which has a respectable age as a health-resort, and attracts the comfortably-placed shopkeepers for the summer and autumnal outing,—in contrast with Redcar, Saltburn is languid and empty. It does not court the brisk life of the popular health resort, nor the overflowing spirits of the "trippers" who make lively the sands nearer the mouth of the Tees, but to those who appreciate its subdued tone, the pleasures of sea and shore, the scenery of bold bluff and wooded valley, and the deep note of the sea, Saltburn is indeed attractive amongst northern watering-places.

Its site was happily chosen: it is where the sands from the Tees mouth end, ruddy cliffs rising to the south and east, and continuing along a rugged coast broken by little bays and coves at the streams' mouths, to Whitby. Saltburn is placed high, and from it to the north the Durham coast is seen, while far west a veil of smoke defines the course of the Tees. The picturesque coast shows the red face of Huntcliffe Point, that "Huntcliffe Nab" of which Drayton sings as a treasure-house of "stones of a spheric form," which "do headless snakes of stone within their rounds enclose." Between the Point and that part of the town where the Italian front of one of the hotels presents itself, there runs inland from the shore a wide valley, the sloping sides of which are clothed with rich woods, and the grounds of which have been admirably laid out as pleasure-gardens, through which the Skelton "beck" murmurs on its path to the sea. South, the ground slopes upward, and from Boulby, on the coast, to the west of Upleatham, shuts in the moors that intersect the Cleveland district. South and west the great industry of that district shows itself in the puffs of smoke that tell of the mining railways, in the projection of mine-ventilators on the hillsides, and in the rows of mining cottages that here and there dot the green hills and cluster in the valleys of what is a site known in history.

Within a mile or two is that castle of Skelton which was one of the possessions of that great family of Brus that gave kings and queens to Scotland, and dignitaries many to all the three countries. And it has later remembrances, for the predecessor of the present castle was the "Eugenius" of Sterne, and often "Yorick" was the soul of a company "when wit, wine, and mirth" flew round the table. "Crazy Castle" has given place to the structure that now shows its fine western front and embattled cornice to a land that has been changed by the great industry of the North. As near Saltburn, towards the Tees mouth, is the fine old hall at Marske, built by one of the Pennymans in the days of the First James; at Kirkleatham is the ancient hospital founded by Sir William Turner in 1676, with its museum and a grand library; and the quaint old fishing town of Staithes, still proud of its association with Captain Cook. Kilton Castle, "probably built by Robert de Brus," and the old Priory at Guisbrough, are amongst the most magnificent of the ruins the district shows.

Screened from the east winds by the hills in front, swept by the breezes that blow from the Cleveland moors, braced by the strong winds that come in from the German Ocean, life in the summer-time passes pleasantly at Saltburn. It has no business to disturb it,—it is a town for the health-seeker and for the holiday-maker. It is on the shore, the long expanse of sands stretching from it to the Tees mouth; it is on the verge of the moors, and it looks down on the wooded sides of the pleasure-grounds of the glen. Alike from its streets may be seen the fleets of merchant vessels pressing on the ocean to every country, the mining land where the "stones are iron," and the agricultural and antique part of Cleveland, where Freeburgh's conical hill looks on a scene of meadow and moor such as it has known for centuries. It is the appreciation of these advantages that gives to Saltburn the pre-eminence amongst the watering places north of Whitby; its free fresh air, its quiet, and its commanding views. In the future, when from the south it is more easily accessible, these advantages will be more fully appreciated, and Saltburn will attract the many where it has now charms chiefly for the few, who enjoy its quiet and appreciate the rest it gives.

ASSERTED EVIDENCE OF ORGANIC LIFE IN OTHER WORLDS.

A great modern writer, between whose earliest and whose latest works there exists a contrast more painful than any other that can be cited in the records of literature, imagined that he was able to fix the limits of the knowable,—to define what man could, and what he could never, know. Strong in a conceit of which his own works afforded the keenest condemnation, Comte asserted that man could never know anything whatever of the fixed stars, and should therefore confine his studies of the nightly heavens to the movements of the planets. Not many years passed before the folly of the prediction was proved. The spectroscope was added to the implements of science, and before long Huggins was telling us not only of the chemical constituents of the various celestial bodies, and of their solid, liquid, or gaseous conditions, but of the direction, and approximately of the speed, of the motion of some of the stars,—stars so distant from our world that the figures which express that distance in arithmetical form fail to convey any intelligible idea to the mind.

A little time has passed. We have taken breath after the announcements of Mr. Huggins. The latest signals afforded by the study of the spectroscope are those which promise to give some information as to the nature of light itself, as illustrated by the different behaviour of spectra produced by refraction through a prism, and reflection from what is known as a grating, a set of parallel lines ruled on glass at incredibly minute distances from one another. We have scarcely given attention to the hint that the tail of the last comet, B 1881, gives in the spectroscope the lines proper to the vapour of burning alcohol. And now comes another message from the celestial dominions, a message, if it has been rightly read, more wonderful than any that has been signalled by light: a message,—nay more than a message,—a positive relic of life that has been lived outside the boundaries of our own planet. For such, if the facts stated be substantiated, is the result of the microscopic investigation of certain meteorites by Dr. Hahn, of Tübingen.

We speak, of course, with all the reserve that is due to the repetition of so startling an announcement. The first thing to be done, no doubt, is to ascertain beyond all possibility of question that the substances examined are certainly of meteoric, that is to say of non-terrestrial, origin. As to this the statement that the forms detected, though akin to some known to the naturalist, are yet generically different from any hitherto discovered, is not without weight. There are, it is stated, two sorts of meteorites known. Of these, the first, with which we most of us are more or less acquainted, are exclusively composed of iron. Our readers may, many of them, have seen the enormous mass of pure meteoric iron in the British Museum, a bolt which may explain the origin of the famous black stone at Mecca, or of "the image which fell down from Jupiter." The other class of meteorites, which are relatively rare, are silicious, without any trace of iron. Hydrocarbons were detected by Wochler in an aërolite that fell in Hungary. It was thought that they could only have originated in the decomposition of organic substances, but the credence demanded for the idea seemed to be without the bounds of sober speculation. But even more direct evidence is stated to exist by Dr. Hahn. The silicious meteorites are found generally in the shape of spherical or pear-shaped masses, slightly coloured. Dr. Hahn has made sections of these bodies, which he has subjected to microscopic examination. In sections made parallel to the length are some fibres composed of small polyhedra, presenting the form of an irregular polygon with a radiating appearance. These fibres terminate in a point, and sometimes ramify. They comprise a clearly coloured nucleus, enveloped in a darker substance. Dr. Hahn states that they are composed of fossil organisms. He has called in the aid of Dr. Weinland, who has attempted a classification of the forms, which he compares to those found in the *detritus* of coral rocks. He distinguishes about fifty species of polyps and of algæ, imbedded in silex. If it be hereafter established, first, that the bodies examined are unquestionably aërolites, and, secondly, that the chemical and physical signs of organisation are indubitable, we shall have the first direct proof of the theory which has been so fiercely combated by many worthy men, that the organic life existing on our earth forms but a portion of the great system of planetary or sidereal inhabitation.

The most serious difficulty which to our mind is opposed to the views of Dr. Hahn is to be found in the question whence the fossils in question can be supposed to have come. That corals should exist, like, though not identical with, some of the palæontological corals of the planet Earth, or other planets of the system, would be to our mind highly probable. But how should any such relic be removed from its native world? The most violent mode of ejection of any terrestrial mineral into the air with which we are acquainted is that of volcanic scoriæ and ashes. But though dense clouds of these may cover a continent, shutting out, as we have seen, and as Pliny records on the occasion of the destruction of Pompeii, the light of day, nothing rises more than a few miles from the cone. There is no projection of such an order as to send the emitted body beyond the immediate sphere of the attraction of the earth. Neither do we conceive the possibility of such an eruption, or the probability that water rolled on consolidated fossils, showing no signs of volcanic heat, could be found among the scoriæ. Without at all saying that this objection is unanswerable, we still hold that it is one which must be met by the advocates of fossil meteorites. We admit the existence of interplanetary regions in which matter of various kinds may be now revolving as a sort of planetary dust. But we cannot conceive of the growth and existence of fossil life, even of the simplest type, in such a condition. Again algæ are mentioned, organisms of which, as well as of corals, the home is in the water.

We can, indeed, present the advocates of the fossil meteorites with an explanation; but it is one drawn by imagination from the realms of pure speculation, and we are by no means sure that it will be welcomed by the philosophic German mind. It is this. It is well known that in the planetary space which intervenes between Mars and Jupiter, a blank, where a planet ought to be (according to Bode's law) was long thought to exist. It is now known to contain

numerous planetoids, or small revolving bodies, the relation of the orbits of which has led some astronomers to the idea that they are the fragments of a fractured planet. If they be regarded as the unconsolidated elements of a planet which was never coagulated, we get no help from the thought. But if the idea of destructive explosion be admissible, there can be no reason why water-rolled fossils should not be scattered in the catastrophe; or why, after long wandering in the regions of space, they should not at some time stray within the range of the attraction of our globe, and descend on its surface as meteorites. Very wild, the astronomer may say. True; but how else could they come?

FATAL EXPLOSION AT HIGHGATE.

Steam-boiler explosions, preventible evils as they assuredly are, are familiar to us. Gunpowder explosions recur, at the powder-mills, almost with a calculable regularity. Coal-mine explosions, too, often carry devastation through enormous areas of underground activity, and desolation through a county or a province. Water explosions now come to add a new item to the list of terrors,—or rather, as water is neither an explosive substance, nor even an elastic fluid, an explosion the destructive energy to produce which has been accumulated by the silent energy of water.

A reservoir belonging to the New River Company is situated on ground above the Highgate Archway. Its capacity is such as to hold about six million gallons of water, which is pumped up from the great filtering-beds of the company in the neighbourhood of Hornsey. On the closed system of pipes was fixed an air chamber of wrought-iron, about 6 ft. by 10 ft. in height. On the afternoon of the 16th of August this suddenly flew into the air, wrecking a part of the buildings, and killing William Langden, the engineer, who was found in an insensible condition under the *débris*. A disaster of so unusual a kind demands the most anxious inquiry. We do not say this by way of attributing hypothetical blame to any one. The works of the New River Company are under the watchful and competent control of an engineer whom his brethren must approach rather as learners than as critics; and we are confident that the more minutely his arrangements are inquired into, the more thoroughly will this prove to be the case.

But the civil engineer never leaves school. To keep up to the demands of his noble profession he must ever be a learner. He must be a learner from nature, from the counsel and experience of his contemporaries, and, above all, from any new and strange disasters. In the present case we are anxious that the mechanical elements of the case should be exhaustively ascertained. The fractured air-vessel should be subjected to a most careful observation, not only *in situ*, but with the aid of the microscope, and of chemical analysis applied to fragments of the metal; and the maximum force which, whether from gravitation or from direct engine-power, could be exerted at the spot, ought to be distinctly ascertained.

The question presents itself for discussion, how far is it advisable to allow of the introduction of a closed air-chamber in a system of closed water-pipes? We confess that the recent explosion (speaking with due hesitation and reserve) seems to confirm our own opinion that such an element is inadmissible. There are two methods by which water may be made to rise to the top of the buildings of a town. One is by pumping it to the top of a commanding eminence, and allowing it to descend and rise again by gravitation. The other is by direct forcing into a closed system of pipes. We have no hesitation in saying that the first method is by so far the safest, most certain, and most satisfactory, that in any case where the character of the country allows, it ought to be adopted, even if at the expense of much additional main-pipe. But where the closed system is unadvisable, it may be thought that the introduction of air-chambers will not only allow of the disengagement of air forced into the mains together with the water, but further serve, not as a safety-valve, but rather in the way of a fly-wheel, in giving elasticity to the pulsation of the system. As to the first object, we can speak from practical experience of a town where the water, being raised to a commanding level, whence it descends by gravitation, flows into the mains so full of air that it resembles milk rather than water when drawn from a tap. But the milky fluid is of exceptional purity. If left to stand in a glass jug it immediately begins to clear, not, as is the case with muddy water, from the top, but from the bottom. Little bubbles ascend like foam, and in twenty or thirty seconds the water is perfectly clear and pellucid. No doubt the air mechanically mixed with it is an advantage rather than the reverse.

As to the use of air as an elastic cushion, the recent event seems to indicate that it is an unnecessary source of danger. Of course the pressure at any point cannot be increased by the fact that it is transmitted from a non-elastic (practically speaking) to an elastic fluid. But the mode in which that pressure will behave, if anything should give way, is totally different, according as it acts on the one or on the other medium. The rupture of the air-chamber in the recent case proves that a force was applied of sufficient power to rend the metal. If that force had been applied (as in proving tubes) by hydraulic pressure, the iron plate would have torn when its cohesion was overcome, and there would have been an end. But the introduction of the elastic fluid makes this difference; the moment the plate begins to crack or to tear, instead of adequate relief being administered to the tearing power, the elastic force follows up its victory, and, expanding as it overcomes resistance, converts a fracture into a burst, a crack into an explosion. We very much doubt whether any sound reason exists to justify the encounter of such a source of danger. As to this, however, we hope that the disaster of the 16th will elicit an expression of the opinion of the most experienced hydraulic engineers of the day. We commend the subject to the attention of the Institutions of Civil and of Mechanical Engineers.

BUILDING MATERIALS IN THE SIXTEENTH CENTURY.

The amateur theatrical performance recently held, under Royal patronage, in the great hall of Hampton Court Palace, has attracted not a small amount of public attention, and the weekly picture-papers have not disdained to devote their artistic consideration to the conspicuous representation of the scene which the old hall presented on the revival of the memories of its old glories. The Great Hall of Hampton Court Palace, incorrectly termed the "Wolsey Hall," for it was built some years after the famous cardinal had handed over his palace to his master, Henry VIII., holds architecturally an interesting place in the art history of the country. It is familiar, from numerous representations, to many who have never had the good fortune to visit Hampton Court. But a further professional interest is connected with the Great Hall of Wolsey's Palace. We possess detailed accounts of the expenses of its erection, such as are in very few cases to be found. These details relating to the price and quantity of materials used in the erection of the hall are carefully preserved in the Public Record Office; but, practically inaccessible there to the public, they will be found published at length in the excellent "Guide to Hampton Court," written now many years ago,—and, we believe, at present out of print,—the work of "Felix Summerley," now known to the world as Sir Henry Cole, K.C.B., the energetic director in its early struggles of the South Kensington Museum.

We take the opportunity, as an appropriate one, of the public interest recently aroused by the amateur theatrical performance in the Great Hall of Hampton Court Palace, to lay before our readers a portion at least of the curious details in the original account of the building of the hall, "anno 23 Henry VIII." (1532, an interesting year as that following the acknowledgment of the King as "supreme head of the English Church"). Some comparisons by those familiar with the prices of the similar building materials in the present day will be interesting to make, over the 350 years' lapse of time. It may be stated of the comparative value of the sums mentioned, that, taking the standard of the current price of corn then and now, the sums of the time of Henry VIII. would require an equivalent of some eight times their value in the latter quarter of the nineteenth century.

The original Hall of Wolsey's Palace having to be pulled down, the first item on the accounts refer to the sums thus expended:—Freemasons at 3 shillings a week, "every of them working in frestone uppon doors, wyndowes, &c."; carpenters at sixpence a day, "joyners" paid at the same price; in pulling down the hall, every "sawer of tymber" paid at 12 pence the 100 ft.; carpenters for "framyd scaffold," at 6 pence a day; "tylers" taking down tiles, 8, 6, and 5 pence a day; labourers, 4 pence; "setters" "to take down freestone, 3 shillings and 8 pence a week each; and carpenters sorting the timber of the roof, 8, 6, and 4 pence a day. In the building of the new Hall we have the items of the purchase of the implements and materials, mattocks, "scaffold poles"; "10,000 of bryke," paid for at 4 shillings and 6 pence "the thousande"; carters from the brick-kiln at 14 pence a day; "lodes of lyme reddy burnyd," at 10 pence a quarter; chalk at 2 pence a load; "plaister of Paryshe" at 6 shillings "the maunghte"; "Rygate stone," at 4 shillings and 2 pence the ton; "hand ropes to rere the rouff of the New Hall," 29 lb. at 2 pence the lb.; and "six crowys of irone to raise the rouff," at 1½ pence a lb. Bricklayers, "every of them," at 6 pence a day.

The masonry work we find paid for by "the pece," and, of course, the prices vary according to the nature of the work; the same is the case with the carving in stone and wood. In the smiths' work, "barres" standards for windows, for each hundredweight (of 112 lb.), 1½ pence the pound, the price at which all the iron quoted seems paid for. There are some curious items respecting the nails used; 7,350 "dubbyl tenpenny nayles inglys," at 11 shillings the 1,000; 3,800 "myddil bradds" at 12 pence the 100; 2 shillings the 100 for "great bradds; 2,000 "twopenny nayles," at 10 pence the 1,000; 2,000 "syngle tenpenny nayles," at 5 shillings and 8 pence the 1,000; 12,000 sixpenny nails at 2 shillings and 6 pence the 1,000; 5,000 fivepenny nails at 2 shillings and 10 pence the 1,000; 4,000 fourpenny nails at 2 shillings and 4 pence the 1,000; and 1,500 "rought nayles" at 10 pence the 100.

In the item of carpenter's work we find mention of "sesyned playnche," at 3 shillings and 2 pence the 100; 2,000 "fine bourddes," at 31 shillings and 13 pence the 1,000; six "payres of scruse" at 5 shillings and 2 pence "the payre." The plumbers' items quote lead at 4, 7, and 8 shillings the "fother"; "sowther" at 4 pence the pound, "for sorderyng the pypys abowght the kyng's New Palace."

The items for the payment of glazier's work (*anno* 25 and 26 Hen. VIII., 1534-35), speak of "8 panys, new sett, 54 feet, at 5 pence the fote;" the stained and painted glass, with its armorial bearings, is, of course, paid by the piece, but all quotations of plain glass are at 5d. the foot. To pave the hall we see that there were required 6,080 "playne tyles" at 28s. 8d. the 1,000. There is a curious item of "tallow candells" burnt during the night-work, and paid for at 1s. 6d. the dozen; "paving tyles" at 18s. 4d. the 1,000. The contract for paving the hall amounts 53s. 4d.

The painter and gilder's work is paid for by the piece, as might be imagined, and many of the items mentioned,—a detailed description accompanies each,—may be recognised to this day still in their place. We meet here with a general item for four of the "king's words in Gryke letter, with fyne golde gylte," paid for at 2s. the word; a hundredweight of red lead "for the barres of the hal windowes," 13s. 4d.; and a "pottell of paynter's oyle," 1s. 6d. a gallon; 12 pounds of white lead at 2d. per pound; red lead, at 2d. To a painter of posts (white and green) at 1s. 4d. the yard; and again for painting "badges of the king, gilt with gold and bysse," and other colours, 21s. the yard.

We again come upon the item of "fremasons," this time at 12 pence a day; the "warder," 5 shillings a week; "setters," 3 shillings and 6 pence a week; "lodgman," 3 shillings and 4 pence a week; "hard hewers" 3 shillings and 4 pence. Among the carpenters the master is paid 12 pence a day, the "warden" at 8 pence, the rest, as apprentices, 4 pence to 8 pence. Among the bricklayers the master receives 12 pence a day, the "warden" 8 pence, the rest 7, 6, 5, and 4 pence. The master "joyner" receives 10 pence; the rest 7, 6, and 4 pence; the master "paynter," 12 pence; the grinder of colours, 5 pence a day; the master plasterer, 8 pence; the "serviters," 5 pence; the "plummers," 5 pence to 7 pence a day; the "sawyear," 12 pence a day; "scaffolders" at 6 pence a day; the carters at 16, 14, and 12 pence; the labourers at 4 pence.

A number of other items are given, but in no

way connected with the building of the hall. Those who are curious on such matters we again refer to Felix Summerley's "Guide to Hampton Court; its Architecture, Tapestries, Paintings, Gardens, and Grounds."

THE TIMBER TREES OF NORTH SCANDINAVIA.

A LECTURE on "The North Scandinavian Forests and the Wood Trade" was delivered by the Rev. G. Liljeroth, at Albion Hall, London-wall, on the 16th inst. The lecturer, after some introductory observations, proceeded to define the geographical extent of the forests of Scandinavia, observing that, except a belt along the northern coasts of Norway and Sweden,—*i.e.*, on those parts of the coast between the latitudes of 66° and 72° N., pine-trees grow all over the peninsula. It was his intention, however, to confine his remarks to the North Scandinavian forests, especially those of Sweden. The trees found nearest to the Arctic regions stand alone on the southern slopes of high hills, which protect them against the northern wind. Travelling southward, the explorer would find that as the intensity of the cold diminished the number of trees increased, until at last they formed vast forests. As the whole of Lapland had not yet been fully explored and mapped, it was impossible to state the exact extent of its forests. It might be stated, with tolerable certainty, that the forests of the North of Sweden covered an area of about 17,000,000 Swedish acres, and if the Norwegian forests of Nordland and Finnmark were taken to cover about the same extent,—as was probably the case,—the sum total was an area of 34,000,000 of Swedish acres of forest. This estimate was certainly not excessive, and perhaps it was insufficient. It was not without reason that Swedish iron and Swedish fir had been sought for everywhere. A journey through Scandinavia from the North of Sweden to Denmark would enable the traveller to note the changes in the character and appearance of the trees as he travelled southward. In the most northern parts of the country the trees seemed to have a struggle to eke out an existence; but as the southern part of the country was approached, they became mighty monarchs of the forest. Nothing was more edifying and impressive than a walk through one of the typical forests of North Scandinavia. It was not to be wondered at that the forests had been regarded by the people as holy. The North Scandinavian forests were capable of affording the largest and best supply of timber. The forests in the south were getting used up, and did not seem to have a bright future before them, owing to the wastefulness which was constantly going on. Whole tracts of forests were sold, and the trees cut down, at haphazard almost, and without any settled plan of replenishment. Formerly forest lands were acquired under conditions quite different from those which now obtained. Many people who had amassed such large fortunes as to enable their children to become magnates, had acquired their wealth through having obtained forest property in an improper way. At the present time, however, the timber merchants of Sweden had to buy the forest ground, at great cost, and there was great competition for Crown forests when put up to auction. Cutting-down was going on with undiminished vigour without due provision for the future, and as forests were essential not only to the prosperity, but to the very existence of the inhabitants, the outlook on the future of the country was not a very bright one. The Scandinavian timber-hewer,—the actual worker in the woods,—was necessarily a strong and healthy man. Before he started for the forests he had to prepare and take with him provisions for two months. His bread was made and baked in thin round cakes or sheets as large as carriage-wheels. These were doubled together and put into a sack. The woodman's other food, consisting of herrings, potatoes, butter, cheese, pork, &c., was also put into sacks. The corn-brandy bottle was carried in a more handy and accessible manner, as was considered necessary, owing to the fact that the woodman, in his journey through the forest, made it his duty to have a drink every time he arrived at a suitable tree,—and it was astonishing, said the lecturer, how many "suitable" trees he found on his journey. When a party of hewers arrived at that part of the forest which was to be the scene of their labours, the first thing that they did was to provide themselves with a hut for living in, leaving a hole in the roof for the smoke from the fireplace to pass out. The fireplace consisted of a few stones in the middle of the floor. Round the walls of the interior of the hut, and about level with the fireplace, were fixed broad shelves, so broad as to allow of the inmates sleeping on them with their feet towards the fire, the fire being made so as to burn all night long. Early in the morning, when the men arose from their slumbers, kettles containing potatoes were placed round the fire, and frying-pans containing meat or fish upon it. Knives and forks were not used. Every man helped himself with his fingers, which were already covered with resin, soot, and other matter,—dirt of some standing. After the men had made themselves sufficiently comfortable by means of warmth and food, out they went into the intense cold to their work,—a work attended with many dangers, for often a falling tree would get entangled in the branches of another tree, and the work of disengaging it required a great amount of intrepidity, quickness, and daring. The pay of the timber-hewer was very small. Although he worked from early in morning until late at night, he seldom earned more than 1½ or 2 Swedish crowns a day. The removal of the fallen trees from the forest was usually accomplished, in the first place, by horses. Beautiful as those animals were when they went into the forest in the autumn, in the spring they emerged in a most dilapidated condition. When the roads were bad the poor animals suffered fearfully, and they were often beaten shamefully. At times they had literally to wade in snow, and at other times they had to drag their sledges over sand and stones. In going over large stones they had a jumping style of motion, in order to get free of the trees they were drawing. When the trees arrived at the watercourses they were floated down. The work of a floater was both amusing and dangerous. Very often a single log would place itself across the stream, and so prevent the passage of thousands of logs. The mass of logs accumulated through this obstruction could only be liberated by cutting away the obstructive log. No one was compelled to perform this dangerous work, but somebody sufficiently daring generally volunteered to cut away the log. The logs behind, in consequence of the rapidity of their descent down the streams and over the waterfalls, mounted one upon another, until there was an enormous mass of timber waiting to be set free from the obstruction. When a few cuts of the axe had been made at the obstructive log, it crushed through by the force behind it, and then woe be to the wielder of the axe unless he was as fleet of foot as a cat. The work of removing the fallen trees from the forests often rendered it necessary for the men to sleep out in the open, in the midst of snow and ice, all night. That would not be possible but for the fact that they were able to build a fire of logs which would not only burn all night, but far into the next day. The men lay with their feet towards the fire. The work of floating was in some respects very detrimental to the population, for, for the sake of earning extra wages, many engaged in it who, owing to the shortness of the spring, could ill be spared from the work on the farms. The worst of it was that many of the men were not only none the richer for their extra earnings, but eventually a great deal the poorer, for they spent their extra earnings in drink, and led such a riotous life that they unfitted themselves for steady application to work in the future, and they returned to find their homes neglected and their characters blasted. The saw-mills, which were now mostly worked by steam-power, were for the most part situated on the mouths of the rivers on the most suitable parts of the coast. The saw-mill owners were, as a rule, a well-to-do body of men, living in houses having ten or eleven rooms, whereas very often the workman had only one room for himself and the whole of his family, which room had to serve at once as kitchen and bedroom. The relations subsisting between the mill-owners and the workmen were not of the best. When the men complained of smallness of wages, and sought for more, they were taunted with such extravagances as wearing overcoats and goloshes, and carrying umbrellas, to say nothing of drinking Champagne, going to "Temperance and religious meetings," and otherwise "throwing away" their money. The men, on the other hand, when the mill-owners informed them that badness of trade compelled them to reduce their wages, retorted on the masters by saying that hard as they alleged the times to be, they did not live less luxuriously or eat less expensive dinners than in more prosperous times. Thus there was continual recrimination between masters and men, and this was the cause of the Sundsvall strike a few years ago, which had been productive of a great deal of damage to the trade of the North,—and unfortunately the repressive measures of a military character which were taken had made matters worse. The king recognised that, and, over-ruling the local authority, ordered the withdrawal of the troops. Unfortunately, the strike in question had left many evils in its train, and one of them was the tendency towards Socialism and irreligion which was found amongst some of the working people. Although vast areas of forest had been cut down, and much of it burnt or wastefully destroyed, a very great deal remained,—some of it almost impassable owing to its density. But the requirements for home consumption and export were very great. For home consumption, over 96,000 standards of timber were used every year for making corn-brandy alone, independently of other home needs, while 718,000 standards were exported. Even with this large consumption and export, however, the forests of Scandinavia would be equal to the demand upon them, provided that they were properly conserved and protected. At present a great deal of damage was done by wounding and stripping the trees for the sake of getting tar. This was carried on with great and reckless waste, and the trees, being allowed to stand in their mutilated condition, prematurely withered away and died. It was hardly possible to imagine the melancholy appearance which some parts of the forest presented owing to this mutilation of the trees. If a suitable machine could be devised for economically and expeditiously removing the stumps of the trees which had been cut down, this mutilation would very soon cease, as the stumps, which really contain the material most serviceable in making tar, would be profitably utilised instead of being, as hitherto, wasted. In the northern parts of the country a great deal of damage was done to the trees by taking off the bark for food for goats. The best and most sappy trees of the forest suffered from this cause. Millions of trees of the finest promise had been destroyed owing to these injuries. Forest fires, which were of frequent occurrence, also wrought terrible havoc. Some of these fires were, it was to be feared, the result of malicious acts, but the majority of them were the result of accident or carelessness on the part of the woodmen. When a fire broke out in the forest everybody in the vicinity was bound to help to stay the disaster. This was commonly done by clearing a space round the area of the fire by cutting down the trees, a process which had to be repeated over and over again when strong winds were blowing. A tract of burnt-up forest presented a fearful sight. Happily, the nation was awaking to the importance of conserving its forests, and schools of forestry were everywhere springing up, and increasing the number of their pupils. An organised system of inspection had been established. Every year plenty of forest seed was sown. In one recent year Sweden had 1,375 planting schools, which were the means of planting 3,589 lb. of seed. This year 4,462,668 plants had been planted. In this way the nation was doing a great deal to keep the forests alive, although rather late in the day. It should be remembered that it was a long time before the best trees came to maturity. Some of them needed to grow for 250 years before they were fit for felling and sawing. It would thus be a long time before the forests now being recuperated would be ready for the axe of the hewer. In conclusion, the lecturer referred to the honourable dealing which he said was characteristic of the English wood-merchants, and expressed the hope that the pleasant relations which now subsisted between them and the Swedish merchants would remain unimpaired, to the advantage of the trade of both England and Scandinavia.

Mr. Liljeroth, whose interesting lecture, delivered in the Scandinavian tongue, was interpreted to the meeting, was accorded a vote of thanks.

Surbiton Cottage Hospital.—The first premium for plans for a cottage hospital at Surbiton was awarded by the committee to Mr. Ernest Carritt, 4, Lime-street-square, London; and the second premium of 10*l.* to Mr. Loxwood King, of Surbiton.

DAMP: ITS CAUSES, EFFECTS, PREVENTION, AND CURE.

Under this title M. G. Philippe, a civil engineer officially employed by the municipality of Rouen, has contributed to *Les Travaux Publics* a series of valuable and interesting papers, of which we reproduce the principal points. The subject is of universal and individual interest, and of even greater importance in the climate of England than in that of France.

The *causes* of damp in buildings are,—1, the presence of water in the atmosphere and the soil; 2, the porosity of building materials, which absorb it.

Its *effects* are only too well known, and may be classified as,—1, disintegration of masonry, with injury to wall-papers and other similarly-placed decorations; 2, decay of timber, and injury to wooden furniture; 3, development of saltpetre on walls, with injury to wall-decorations; 4, injury to health of inhabitants.

The decay of the timber used in building often carries with it an especial danger in France, because there chesnut-wood is frequently employed for large beams; and as this wood decays first at the heart, while the outside remains sound, no superficial examination will give warning when an important piece of timber may be about to give way.

The development of saltpetre results from drying after damp. It is well known that this substance can be obtained from old building materials, and the white patches which it forms upon perfectly sound walls are familiar. During the siege of Paris, in 1870, the possibility of utilising it for military purposes was taken into consideration, and a committee was appointed to investigate the amount obtainable in this way in case of necessity. It reported that the production of saltpetre in a building was in direct proportion to its age and uncleanliness. This conclusion appears very obvious, when we remember that saltpetre consists of potash, combined with nitric acid, and that nitric acid is azotate of ammonia. Kuhlmann, a distinguished chemist, proved by experiment that ammonia contained in a porous body is oxidised by contact with the air, and becomes azotate of ammonia. Fermenting vegetable and animal matter everywhere furnishes ammonia, building materials are the porous body required, and all clays contain potash; so that all the component parts of saltpetre are ready to hand, and as soon as the moisture which has held it in solution is evaporated by drier air, the salt appears upon the surface. It is not necessary that ammonia should be present in any offensive form; rain will contain it, and fogs (especially town fogs) carry it in comparatively large quantities.

The prevention and cure of damp may be attempted by:—(1.) employment of suitable materials for cellars, and other parts of buildings below or on the level of the soil; (2.) damp-courses to stop the upward progress of damp; (3.) preparations of different natures, either to protect the face of an exposed wall from the weather, or to prevent damp in the wall from affecting an apartment; (4.) precautions against infiltration.

The most thoroughly sanitary foundation for a building is concrete; and the author recommends covering the whole level of the future building with a layer 4 in. thick, composed of two-thirds broken flints well washed, and one-third mortar made of lime and gravel sand. He estimates that such a layer would cost about 2½d. per square foot.

Well-puddled clay forms a good and inexpensive foundation, in districts where it is easily obtained. A layer 8 in. thick should be spread over the site of the building, and extend for about 16 in. outside the walls; and the external 16 in. should be carried up with the wall until the level of the soil is reached. Clay cannot, however, be used to form a dry flooring for old buildings, as can be done with concrete.

Various methods have been proposed and employed for destroying that porosity of building materials, which is one of the chief causes of the mischief. M. Sébille, a civil engineer in Paris, has patented a process for injecting materials (especially brick) with gas refuse, which penetrates their substance, and renders them impermeable by water, at the same time increasing their weight, and giving them a brown colour. A wall built with bricks thus prepared is absolutely dry, and their price is only increased by about 3s. 4d. per 1,000. Good results have been obtained by immersing the materials in solutions of soap and alum successively, and by applying these two preparations to the thoroughly-scraped surfaces of the walls of buildings already standing. The result of the chemical reaction which follows is to fill the pores of the brick or stone with a fatty substance, which opposes the passage of water. The immersion costs about 1d. per cubic foot of material.

The method preferred by M. Philippe is to plunge the material with the hand into a solution of silicate of potash for a time, merely long enough to allow all the air-bubbles to disengage themselves from its surface, and then to lay it aside for forty-eight hours before using. The additional expense is extremely small, and the results (according to his experience) very satisfactory.

Many varieties of cement and other material are employed for mixing with mortar, in order to render it impermeable by water; of these the principal are Vassy or Gariel cement, Vicat (from Grenoble), Portland, French Portland, and Peterspense cements, ground brick, Pozzolana (volcanic), wood ashes, calcined oyster-shells, &c. The greatest additional expense from using any of these is from 3d. to 7d. per cubic foot of masonry. A layer of such cement 1 in. thick, lining the walls of cellars, &c., is very useful, and costs on an average a little over 3d. per square foot. M. Philippe does not recommend French Portland cement, which is prepared chiefly at Boulogne, and which is much used in the North of France, as it very imperfectly excludes damp, and is easily penetrated by saltpetre. Of French cements he prefers the most expensive,—that of Vassy. For application to damp walls, solutions of soap and alum, used one after the other, have already been mentioned. Another substance which has proved useful for the purpose is gas tar. The wall must be well scraped, heated in parts by means of a hand-stove, and the tar applied with a brush as hot as possible. It then penetrates into the pores, and hardens in cooling, forming a crust which arrests the passage of damp and saltpetre. The cost is very trifling.

An important and interesting piece of work of this kind was performed about the year 1813, under the direction of MM. Darcet and Thénard; and as their methods have not been surpassed, we quote a portion of their own account, extracted by M. Philippe from vol. 32 of the "Annales de Chimie et de Physique":—

In that year, "M. Gros undertook to paint the upper cupola of the Church of Sainte Geneviève. The surface had been prepared like a canvas, with a layer of strong size, covered with white-lead mixed in drying oil. M. Gros consulted us upon the durability of this composition, and we did not hesitate to declare that it was far from offering the desired security against damp. After consideration and experiment, we adopted the following method. All the previously-applied preparation was entirely removed; portions of the interior of the cupola were then successively and highly heated by means of a large gilder's stove, and our preparation applied with large pincers, at a temperature of about 212° Fahr. To facilitate its absorption, the wall was re-heated once or twice during the process. Successive coatings were applied until no more could be absorbed. When dry, a coating of white lead mixed in oil was superposed, upon which the painting was to be executed. The preparation used consisted of one part of wax and three parts of boiled oil, with one-tenth its weight of litharge. The heat employed must merely stop short of carbonising the oil."

The same process was applied by its inventors to two damp underground rooms at the Sorbonne. The mixture was slightly different, consisting of one part oil prepared with litharge, and two parts resin melted in the oil,—an operation of some delicacy. The plaster was allowed to remain on the walls, and they were thoroughly dried with a gilder's furnace, which, by an ingenious arrangement, was made to move along the wall at a fixed distance from it, and at any height. When dry, they were again heated for the application of the varnish, as in the preceding case. Five coatings were absorbed; the sixth was partially absorbed, and formed a smooth hard surface to the wall. The cost of the process is chiefly that of the labour; the value of the materials being about 1d. per square yard.

M. Philippe proceeds to make suggestions and give opinions on various points of detail, some of which we reproduce.

Parquets may be preserved by laying them upon bitumen. This invention was patented by M. Gourguechon, but his patent has expired. It has been successfully varied by laying down a well-smoothed bed of cement, then applying a thin layer of asphalte to a portion at a time, and laying down the parquet before the asphalte had cooled. The only difficulty with these methods is that they cannot be used with pieces of parquet much exceeding one yard in length. The frames by which the parquet is held should be fastened to rows of spaced bricks, and the intervals filled up with pebbles, cinders, or other dry and healthy material, avoiding sawdust, old plaster, and similar matters.

Ventilating Bricks on the Flagedé system may be made on the spot in a mill supplied by the inventor, at the rate of from 300 to 400 per day, of almost any materials that may be at hand,—plaster, conglomerate, brick-earth, even of *torchis* (clay mixed with straw and grass). They admit air to the interior of the walls, and thus keep them dry. Their size is double that of bricks, and their price comes to about 1*l.* per 1,000.

The *Journet patent* for dry floors or areas consists in laying down a bed of cement about 2 in. thick, in which small pipes are laid at about 1 in. apart, and then covered with another 2-in. layer. When the cement begins to harden, the pipes are drawn out by the end, leaving hollow tubes, through which the air can circulate, if proper openings are provided in the walls.

Silicate applied to the surface of buildings renders them almost impervious to the action of weather. It has been applied by M. Kuhlmann to the principal monuments in the town of Lille, and to the new buildings of the Louvre in Paris, with the additional good result of harmonising their tone with that of the older portions. It costs about 10d. per square yard, for three successive applications at twenty-four hours' interval. M. Mignot has invented a cheaper preparation, coloured to suit the different kinds of stone. It is to be noted that silicates cannot be used upon walls where saltpetre has been or is likely to be developed.

Enduits have been invented in great variety by different makers. A very excellent one, called Glyko-metallic liquid, is prepared by MM. Caron et Dupuis. It prevents all action of damp on cement and plaster, by neutralising the alkaline salts which they contain, and can be painted on with perfect security. Old walls should be well cleaned before it is applied; new ones will require three coats, which will cost about 9d. per square yard. An excellent preparation of gutta-percha is supplied by the Maison Gaudri, in Paris, for the same purpose, and costs about the same price.

Windows are one of the principal avenues of damp into apartments. One cause of this is the bad quality of the stone often employed. It should be as hard as can be obtained; or it might be covered with zinc, or coated with a good cement. Small leaden gutters may be placed inside the windows, to catch and carry off the rain which penetrates. This plan is particularly recommended for the windows of kitchens and bath-rooms, where the steam condenses on the glass in considerable quantity.

For *slates*, M. Philippe recommends either the Fourgeau or Chevreau system of hooks in preference to the ordinary method of nailing,—which makes a hole through which damp penetrates.

Drains from closets should be furnished with a ventilating-pipe, carried up with the chimneys, or which may (as at the Hôpital St. Louis and the old Hôtel Dieu at Paris) open direct into the kitchen flue, thus being always secure of a strong upward draught. In this way all unpleasant smells are obviated.

Mr. Gladstone's Chair.—The chair presented by the Greenwich Liberal Association to the Right Hon. W. E. Gladstone, M.P., on the 17th inst., was manufactured by Messrs. G. S. Lucraft & Son, of the City-road. It is made of brown oak, the covering being in buff morocco, finished round the edge with Westminster blue banding and silver nails. In the centre of the back, embossed in gold, are the arms of Mr. and Mrs. Gladstone. The carving on the top of the chair, in the form of a wreath, includes the rose, shamrock, and thistle, and leeks, in the centre of which is the silver inscription-plate. In the panels on each side is an axe. The panel under is emblematical of Despotism on the one side, and of Liberty on the other, with the All-Seeing Eye in the centre. The chair runs on silver castors, and there is a footstool made to match. In design it is a good square sound chair, and creditable to all concerned.

SANITARY EXHIBITION AT EASTBOURNE.

An exhibition, principally of sanitary appliances, but also including objects of art and articles of domestic utility, was opened on Monday last in the Devonshire Park Pavilion, Eastbourne. The exhibition, which originated from a suggestion of the Surveyors to the Local Board (Messrs. C. Tomes & E. W. C. F. Schmidt, A.R.I.B.A.) and Mr. J. T. Rodda, has for several weeks past been looked forward to with a considerable amount of interest. The public men of the town heartily co-operated with the three gentlemen named; his Grace the Duke of Devonshire consented to become patron of the exhibition; and Dr. G. A. Jefferys (chairman of the Local Board) accepted the post of President. The promoters of the exhibition state that it is a well-known fact that Eastbourne is the one town in England where all sanitary matters are attended to perfectly, and having proved the benefits of proper sanitation themselves, they are desirous of sharing them with their visitors and giving them an opportunity of seeing and hearing for themselves what sanitary science can do. With this end in view they have, besides providing the exhibition, arranged for a course of popular scientific lectures, two of which were given on Monday, the others being given on subsequent days of the exhibition. The lecturers on Monday were Mrs. F. Johnstone and Dr. Alfred Carpenter; on Tuesday evening Professor Robert Kerr delivered a lecture; on Wednesday there were two lectures, one at four and one at eight,—the evening lecture, by Mr. E. C. Robins, F.S.A., F.R.I.B.A., being on "The Revelations of Sanitary Science," and the afternoon lecture being by Mr. A. M. Mowbray, F.R.I.B.A., whose subject was "How home can be made attractive and healthy."

At the opening ceremony the President (Dr. Jefferys) officiated, and in the course of his address said that amongst all the objects which he saw around him it would be very difficult to descant upon one particular exhibit; but having seen the programme, he was greatly struck with the title of a lecture to be delivered on Friday by Mr. Schmidt. The title was a very extraordinary one, "How not to build a House." He hoped he should not be encroaching upon Mr. Schmidt's domain if he said a few words on the way in which he (the speaker) considered a house should be built. A house, he took it, should be a building in which a person or human creature might dwell, and unless such a house possessed certain essentials, it would be a dangerous place to dwell in. In his opinion the essentials necessary were, that it should have a good situation, be well-built, be situate in a broad street, have rooms well aired and well ventilated, and be bountifully supplied with pure water,—be replete, in fact, with every sanitary appliance; and, above all things, well and efficiently drained. A town was a crowd of houses, and if each house possessed all the essentials he had mentioned, that town would be a healthy place, and would afford pleasure to those who took up their abode in it. They rejoiced to have a town possessing many, if not all, the essentials he had mentioned in his ideal house. Eastbourne was well placed, and sheltered from the prevailing winds by the glorious Downs. The houses were well built and situate in broad streets, beautifully planted with trees growing luxuriously, which made the town picturesque and beautiful. Apart from this, they were open to the great expanse of sea, which tempered their climate, and the breezes from which not only produced salubrity in the town, but imparted to it a bracing atmosphere. Amongst their 25,000 inhabitants, he trusted there were many who would come and see for themselves the exhibition which those present saw around them, and he was sure they would go back with new ideas, the carrying out of which would benefit their neighbours and the town in which they lived. He would ask, also, that employers of labour should send their artisans to the exhibition, feeling sure that the employers would benefit from the knowledge acquired by their men; he would ask parents to bring their grown-up children; and he would ask masters and mistresses to allow their domestic servants to attend, believing that they would derive such knowledge as would tend to make home comforts more pleasurable. Finally, he would ask all those who could to come, being sure that the end they had in view was to increase the pleasure, promote the health, and prolong the lives, not only of Eastbourne people, but of visitors who frequented that health resort of theirs. In conclusion, he declared the first exhibition of sanitary appliances ever held at Eastbourne duly opened.

The opening ceremony thus ended, visitors commenced a tour of the exhibition. The stands in the pavilion, thirty-nine in number, are arranged around and in the centre of the room. The first stand is occupied by Messrs. Doulton & Co., Lambeth, who show many specimens of art pottery, but whose speciality is their new Silicon ware, for which they claim that it is free from the objections belonging to the high glaze of ordinary pottery, and the porosity and fragility of terra-cotta. Mr. D. T. Bostel, of Brighton, exhibits his Brighton "Excelsior" closet, and other articles. The stand of another local exhibitor, Mr. J. A. Skinner, of Eastbourne, covers a considerable space; he has on view several specimens of closets, cisterns, and ventilators, as well as traps and smoke-preventing chimney-pots. A stand of a similar character, the proprietor of which is Mr. F. G. Underhay, of Farringdon-road, London, adjoins Mr. Skinner's stand; and next to this Messrs. Doulton & Co. have a second stand, at which they exhibit water-waste preventers, bath apparatus, filters, and other sanitary appliances, in action. Messrs. Fredk. Walton & Co., Berners-street, London, exhibit specimens of the Sunbury non-poisonous wall-decoration, in a variety of good patterns. Samples of concrete chimney-pieces, paving and moulding slabs, may be seen at the adjoining stall, occupied by Mr. W. H. Lascelles, of Bunhill-row, London; the Silicate Paint Company have the next stand; and following this is a stand occupied by Messrs. S. & E. Ransome, Strand, London, who show their patent solutions for the cure of damp walls and for preserving stone from decay, and specimens of tile and stone work dressed with these solutions. Concrete tubing for drainage purposes, improved gullies and stoneware pipes, with the Stanford joint, from the Bourne Valley Pottery, Poole, comprise the exhibits at the adjoining stand; and at the next Messrs. Wilcock & Co., of Burmantofts, Leeds, have a fine show of glazed bricks in every variety of colour, architectural faïence, red and buff terra-cotta work in many designs, among them models in foliage and fruit, and sanitary specialities in the shape of patent gullies, flushing tanks and traps, irrigation conduits, sewer ventilators, &c. Another of Doulton & Co.'s stands, at which are to be seen terra-cotta mantelpieces with patent fire apparatus, terra-cotta fenders, hearth tiles, drain-pipes with patent joints, intercepting traps, latrines and urinals, and many other things of a like nature, follows; and at the succeeding stand, occupied by J. C. Ellison, of Leeds, are that gentleman's patent ventilating appliances. The Papyrotile Company, with specimens of a newly-patented and effective wall-tile for decorative purposes, come next; then another stand of ventilating sewer and gully traps, closet pans, &c.; and next Messrs. Robert Boyle & Son's, of London and Glasgow, at whose stand the well-known Boyle's patent self-acting air-pump ventilators are on view. Besides all these there are in the room a stall at which Banner's patent ventilators are shown; another at which can be seen working models in glass of Shone's patent pneumatic ejector as now being applied in the sewerage of Eastbourne; and Mr. C. E. Zimdars's stand of pneumatic bells, indicators, pulls and pushes, and pneumatic door-catches. The pavilion itself contains all the stalls enumerated, and the annexe an equally large number. In fact, the annexe is even more interesting than the exhibition in the Pavilion itself, for in this department almost everything is at work, and practical illustrations are thus given of the utility of the various exhibits. Closets and lavatories of every description, filters and stoves, pottery, cooking ranges, patent window sashes and fastenings, ventilators, gas-burners, lamps, butter-making implements, are among some of the contents of the stands here. Certificates of merit are to be granted to the most meritorious of the exhibits.

Volunteer Sanitary Work.

The audience at the afternoon lecture on Monday, delivered by Mrs. Johnstone (Manager of the Hastings and St. Leonards Sanitary Aid Association), was not a very numerous one. The Rev. H. Cooper occupied the chair, and introduced the lecturer, who proceeded to read a lecture on "Volunteer Sanitary Work—Auxiliary and Subordinate to that of Medical Officers of Health," prefacing her remarks with the observation that as the system she was about to advocate had been carried on successfully in the borough of Hastings for more than ten years, and as the distance between Eastbourne and Hastings was small, those present might easily investigate and judge for themselves whether or not such work might be organised beneficially throughout the kingdom. Mrs. Johnstone then went on to say that notwithstanding all the attention bestowed by medical officers of health on the prevention of scarlet fever, that fever continued to spread and increase from year to year. If, therefore, it could be shown that in any place this fever had been so controlled during ten consecutive years as that in no instance during that period had a serious or general epidemic occurred, then public attention might well be bestowed on the means taken to procure that result. In order to stop the spread of the disease, it was plainly necessary, first, that the system of disinfection practised should be complete in its results; and secondly, that this system should actually be applied. The lecturer then proceeded to relate the manner in which the association at Hastings carried out its work. The association, she said, was maintained purely by voluntary subscriptions. The parochial clergy having poor in their charge were nearly all on the committee, and all on the subscription list, and these, with their district visitors and the teachers of schools, formed the agency for information. By these, information as to the first outbreak of disease was brought to the notice of the association, and the association's visitor, who was the only salaried officer, and who was in receipt of 40*l.* a year, then visited the sick-house, instructing the parents or those in charge how best to treat the sick patient and prevent infection. The association was always more or less supplied with disinfectants by the public bodies of the town, and had always worked in union with the medical officer of health and the medical men in the town. She strongly urged that the subject of treating sick people should take a place in the compulsory code of education for women, and in conclusion advised that public bodies should take into their employ a woman teacher, to perform similar duties to those undertaken by the visitor of the Hastings Association, as well as a sanitary inspector.

The lecturer at the conclusion was loudly applauded, and on the motion of Professor Robert Kerr, seconded by Mr. Councillor Hamilton (Brighton), a vote of thanks was accorded to her.

The Duration of Life.—Why is it Shortened?

The above was the subject of the lecture delivered on Monday evening, to a crowded audience, by Dr. Alfred Carpenter. The chair, in the absence of Dr. Jefferys, was occupied by Mr. G. A. Wallis. Dr. Carpenter, in commencing his lecture, said he thought it spoke well for Eastbourne that they should dare to hold such an exhibition as had been opened that day. At any rate, it showed the honesty of purpose that guided the men of Eastbourne so far as sanitary matters were concerned. They had every reason to be satisfied with their sanitary condition, because if they could show a death-rate of only thirteen in the thousand they had a pre-eminence which was held by no other town in the kingdom. People, however, died at Eastbourne as at any other place, and among them young children. We were told in Holy Writ that the days of men were threescore years and ten, and in bygone days men lived to a great age. Now, however, the average life of persons was forty-one years, and he contended that it was in consequence of our disobeying the laws of nature that life was so short in this age. There was no reason why we should become the subjects of disease except for one fact, namely, that we do that which we ought not to do. No one ought to die of disease, and he fully believed that a time would come when none would die except from old age, which was the natural form of death. Pure water and good sanitary arrangements, he was convinced, would do this in the end, and no one could deny that the operation of local authorities was capable of reducing the death-rate. To prove this, he quoted statistics of certain towns to show that since proper control had been exercised by public bodies appointed under the Public Health Act, the death-rate had greatly decreased. Continuing, he said we were told "That the sins of the father shall be visited upon his children to the third and fourth generation," and stated that he fully be-

lieved that hereditary diseases would not extend beyond the third or fourth generation if the laws of Nature were only properly attended to. If this were attended to he was certain that hereditary diseases would be got rid of. Turning to zymotic diseases, he showed that these were brought about by uncleanliness and by reason of the pores of the skin being stopped up and the excreta kept in the body instead of being thrown off. As evidencing the good effect of properly carrying out sanitary laws, he alluded to the low death-rate in prisons and barracks, which, a few years ago, were the most unhealthy dwellings in the country, but which now were filled with the latest sanitary appliances. Turning to the effects of alcohol, he said the deaths produced by alcohol in this country were something enormous. It was not drunkenness that caused the deaths, because hundreds of thousands of people were killed by alcohol who had never been drunk in their lives. The consumption of alcohol hardened certain carbon matters in the blood, and prevented the proper escape of carbonic acid gas from the body, and he had no hesitation in saying that life was shortened by the consumption of alcohol. He spoke of the necessity of phosphates in food, and said he was glad to see that a call was now being made for bread from which the phosphate and fibrine had not been taken by the miller. After a passing allusion to the danger of defective drainage, a subject, which would be dealt with more fully by subsequent lecturers, the speaker said that the day was close at hand when persons letting houses with foul drains, from which injury resulted to those who lived in them would be punished. In conclusion, he said he was certain that the people of Eastbourne were determined that no seat of disease should find an entry into their town, and thanked the audience for the patient manner in which they had listened to his lecture.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT MALVERN.

The thirty-eighth annual congress of this Association was opened on Monday last in the hall of the College at Great Malvern.

Lieut.-General Sir John Hawkins, R.E., in the name of the town of Malvern, and as chairman of the Local Board, bade the Association welcome, and the Vicar, the Rev. Prebendary Gregory Smith, as chairman of the Local Committee, added a few well-chosen words.

The President of the Association, the Very Rev. Lord Alwyne Compton, Dean of Worcester, having expressed his thanks on behalf of the British Archæological Association, then proceeded with his address. He observed that the last occasion of the kind at which he had taken the chair was at Northampton, as president of the sister Society, the Archæological Institute, and on that occasion he chose as the subject of his address "The Defence of Restoration." He went on to say that, much as they must sympathise with the anti-restoration movement, there was not a little to be said on the other side. They were so accustomed to the well-ordered beauty of their churches now, that they forgot the terrible disappointments of their earlier days. They had in Worcestershire side by side a restored and an unrestored church,—at Pershore. One, indeed, was a splendid example of Gothic, the other a very poor one, and so, it might be said, the comparison was hardly fair. But still he would ask any of the younger members of the Association, who could not date back their antiquarian pursuits to the earlier half of the present century, when they visited Pershore, after inspecting the abbey church, to go also into the other parish church close to it, and to believe that many a parish church which they now viewed with artistic pleasure, if not with antiquarian interest, was but little better, say in 1840, than that which seemed now so strange. They could not forget that these churches were buildings intended for a most important and sacred use, and to sacrifice the very purpose of their erection in an attempt to preserve their ancient features would be something like the action condemned by the ancient poet of those who, for the sake of life, would lose all that made life valuable. If churches were now less interesting as monuments, they were much more beautiful, more suited to the purposes of devotion as churches. Not that there was any reason why both objects should not be attained to. It was usually from ignorance or carelessness,—it might be of the architect, it might be of the builder, or of the restoration committee,—that the old and interesting features had disappeared when the work of restoration had been carried out. If care was taken to preserve, as far as possible, all old work, restoring when necessary, and not otherwise, just so much as needed it and no more, and not attempting, by over-careful matching of stone, and other like tricks, to deceive the future student,—however much the ignorant sightseer might be taken in,—he believed that the antiquary and the devout Christian might be equally well satisfied. This course, he added, might be advantageously followed in cases other than those of churches. Referring to the well-known Queen Eleanor Cross at Northampton, which had been restored three times, as an illustration of his view, the very rev. president went on to refer to Worcester Cathedral, which he considered one of the finest examples of restoration to be met with: had he said of over-restoration he should perhaps have been misunderstood. He could not agree with those who would probably condemn everything that had been done. He thought the interior one of the finest that he was acquainted with,—the very finest, considering its size,—it must be far finer now than it was before the work was begun. The outside, no doubt, looked terribly new, but in an archæological point of view, what had been lost? The whole of the outside stone had largely perished in the beginning of the eighteenth century, from the ravages of the weather upon its surface. Mouldings and other delicate features could scarce be traced. Then came the hand,—not of the restorer, but of the men who wished to make it neat, and new, and tidy. They pared down the mouldering lines, and reduced each string-course to what they looked upon as a more perfect condition; they put on the top of pinnacle neat spire, formed like that of the neighbouring church of St. Andrew; they repaired the tracery of the east window according to their notions of what we should now call Late Gothic. Was all this worth keeping? Was it not far better that the east window, of which they saw so much from the interior, the pinnacle outside, the deep mouldings, and string-courses, should be renewed to something like their original Early English character, even if this involved some newness of appearance for a few years? The walls were dangerous,—unsightly modern buttresses supported them; nothing short of rebuilding would suffice. The internal stonework was replaced, stone by stone, as far as possible. He thought that, so far, the restoration of Worcester Cathedral was wisely and well carried out; but, in some respects, he thought it went too far. The large severe lancet windows had in some cases been subdivided by a mullion, and their heads filled by tracery of a later period of Gothic art. These features were removed at the restoration, and he regretted it, as they were part of the history of the building in the period of our greatest architects, and also because it seemed to him they had lost some beauty by the change. The Gulston Hall they must all regret; but they could not fairly blame the Dean and Chapter, who offered to find 5,000*l.*, one-half of the estimated expenses needed for the Gulston Hall, if those who desired its preservation would raise the rest; but they received only one promise of 5*l.* towards it. After some further remarks on the restoration of Worcester Cathedral, the president went on to ask if we, in our day, had any architecture at all. If what we built now lasted 500 years, would there be anything in it to tell in what century it was built? He had already said that the want of originality in these days might be partly the effect, perhaps also partly the cause, of our treatment of ancient buildings. Careful and minute study of old work seemed likely at least to check any freshness of artistic thought. It was quite true that in the period of the Renaissance the artists and architects did most carefully study and copy the work of the Romans as they found them in ruined amphitheatres and temples, and also in the domestic decorations of Herculaneum and Pompeii. But they were using them for new purposes. The palaces and churches of modern Italy were necessarily quite different from the houses and temples of the Romans, and thus what were then new elements of beauty were worked into architectural designs of which the essential constructional features, the plans, the elevations, the window spaces, the roof were already in full use, and from this combination of the old and the new a very beautiful style was soon produced, but the extraordinarily rapid deterioration of this style seemed to show that from the very first it was not based on sound principles. The copying of the ancient forms and ancient decorations seemed to have had not immediately but ultimately the effect of destroying style altogether, and now we have again taken to this copying, and he feared the result would be even worse than before. He feared they could not boast of a Victorian age of English architecture. As to any remedy, he feared there was none. In concluding his address, the President apologised for dwelling so much on the subject of modern architecture. If they were asked what was the use of the study of archæology, he answered that it was the handmaid of history; that it helped to fill up the outlines given us by the chroniclers of old times; and that by its means they might eventually hope to solve the great question of the unity or the non-unity of the human race,—of the original condition of man in respect of what, for shortness, we expressed by the words civilisation and morality.

Thanks having been voted by acclamation to the President, at the instance of the vicar, Mr. Wright, F.S.A., as congress secretary, gave an outline of the daily proceedings of the congress, and the party, under the guidance of Mr. Nevinson and Mr. Tyrrell, the hon. local secretaries, proceeded to the Priory Church, where Mr. W. Jeffrey Hopkins, F.R.I.B.A., and Mr. E. P. Loftus Brock, F.S.A., gave some account of its history and architectural features.

Mr. Hopkins said the priory was founded at the end of the eleventh century,—Leland said in 1085,—but prior to the Conquest a congregation of hermits resided here, and in ascending the hill joining the present priory is a place called the Hermitage. Aldwyne, the first prior of Malvern, was contemporary with St. Wulstan (founder of Worcester Cathedral) and the priory continued in a flourishing condition until the dissolution of the monasteries by Henry VIII. Mr. Hopkins proceeded to give reasons for his belief, judging from the remains of the old priory which had been excavated, that the church originally had an apse, and speculated as to the cause of the adoption of the double apsidal arrangement, which he thought might be attributed to a difference in the ritual of Continental and English churches. He considered that the double apse originated at Tours. The remains of the lady-chapel, he said, were all of too late a character to have belonged to Aldwyne's time, but they found them on the site where one should have stood. These remains convince him that the chapel formerly standing at the east end was either an aspidal or a circular chapel. Having glanced at what the presbytery of the original Norman church probably was like, Mr. Hopkins proceeded to describe the other portions of the building, taking for his guide such remains of the original building as still remained above or underneath the ground. As to the interior of the nave, instead of the walls presenting their present bare and cold appearance, the original would certainly have been covered with frescoes or distemper paintings. These were even introduced into our smaller parish churches of that date. The church, according to Mr. Hopkins's view, founded on the "faithful stones" that remained, answered in every particular to the description of a Benedictine church. Between the time of the erection of the Norman church and the partial rebuilding that took place in the fifteenth century, Mr. Hopkins said there must have been erected in connection with the church a very beautiful structure of the Decorated period, to which was to be attributed the admirable examples of detail which they saw built into the east end wall, which were dug up during the excavations made by the Rev. Mr. Dyson on the site where the lady-chapel stood. In some of the bosses which formed part of the roof of this chapel were still to be seen traces of gilding. Of the conventual buildings, with the exception of the fifteenth-century abbey gateway, he feared not a vestige remained except a few details of the old refectory. They knew, however, that the cloisters were on the south side, as at Worcester. Turning attention next to the Perpendicular work, he thought there could be no doubt that it belonged to the same date as the fifteenth-century work of Abbot Seabrook, of Gloucester, commenced in 1450. Prior John of Malvern commenced his about the same time. The manner in which the Perpendicular clearstory had been added to the old Norman work was

not satisfactory, and did not harmonise at all with it. Referring afterwards to the old painted glass in the windows, he considered there was none existing to excel it. Let them compare those windows with the dead, dull, heavy productions of modern times. Nevertheless, they had been shamefully treated, and their fragments jumbled together, owing to which many interesting subjects could not be made out. If he were asked what should be done with this old glass, his reply would be, "Simply nothing." He thought, however, that many of the subjects might be recovered and brought together. He would have correct tracings made of the windows, or drawings of full size, and then, following the lines of the leading, would have the drawings cut up into pieces, as one would for a child's dissecting map, and then using the pieces in the same manner, they might bring once more into juxtaposition the dispersed pieces, and recover many of the lost subjects. Referring to the more modern history of the building, Mr. Hopkins said that at the Reformation this monastery was doomed, like the others, to destruction, which the earnest pleadings of Latimer himself were unable to avert. He petitioned that it might, with a few others, be saved, and used for educational purposes, but in vain. The history of the church, from the Dissolution down to living memory, had been little else than the recital of acts of desecration, wanton folly, ignorance, and neglect. It had been restored in modern times and at different dates to its present state.

Afterwards a large number of members and visitors dined together at the Imperial Hotel, Lord Alwyne Compton in the chair.

We shall return to the proceedings of the Congress next week.

PROPOSED VESTRY HALL, ST. GEORGE'S, HANOVER SQUARE.

At a meeting of the St. George's Vestry, on the 18th inst., Mr. Finch moved that the Vestry invite the competition of twelve architects to submit plans of a Classical character, for the construction of vestry-hall and offices in Mount-street, and that three premiums be offered of 100*l.*, 50*l.*, and 25*l.* respectively, for the first, second, and third best plans. That the Vestry appoint a committee, to be called the building committee, to prepare a plan of the exact site for new buildings, and the necessary conditions upon which the competition is to be invited. The extreme limit of the cost of the building, exclusive of the fittings, to be 12,000*l.* The price for the land (3*l.* per superficial foot) had been agreed to. He thought 12,000*l.* would be a sufficient sum for the building. Mr. Dowdeswell seconded. Finally the Vestry decided to adjourn the question till the first meeting in November.

THE "AUBEL" PRINTING PROCESS.

The "Aubel" system of reproducing architectural and other drawings has been the subject of some interesting remarks in one of the German technical journals. The process differs from photo-lithography and other systems of a similar character, inasmuch as neither asphalte nor gelatine is used in the plates. The secret of the invention consists in the composition of the photographic plate, from which an impression is obtained either on a lithographic stone (whence the printing is done as usual), or on bright-polished zinc plates. The latter are, by an etching process, made to serve for the printing-press in such a manner as to replace the ordinary wood-block. An unlimited number of copies of equal distinctness can thus be produced. The "Aubel" system surpasses ordinary photographic productions as to the size of the impression. A plan of Cologne is said to have been executed by this process, of the dimensions of 39 in. by 52 in., the whole printed in one piece.

RESTORATION OF THE CASTLE AT HEIDELBERG.

The attention of the Grand Ducal Court of Baden has lately been directed to the question of restoring the above noble ruins. A consultation of architects of note will, it is said, be shortly held to consider what steps should be taken. The subject has for some time been before the profession in Germany, and has attracted the attention of some of its most eminent members.

PRINCIPAL PORTAL OF THE EX-CONVENT OF SAN PABLO, VALLADOLID.

If we except Henry VII.'s Chapel at Westminster, and Roslin Chapel, Scotland, we have no examples of the elaborate surface richness displayed in some other countries in the buildings erected just before the Renaissance. Spain, as we have before had occasion to show, in the series of illustrations by which we are seeking to make better known to untravelled English readers than has hitherto been the case the architectural glories of that remarkable country, has many specimens of this extravagant style of ornamentation, belonging chiefly to the reign of Ferdinand and Isabella, A.D. 1474–1516, though some are earlier. We add to the instances of lavish exuberance we have already illustrated, a view of the principal entrance to the Ex-Convent of San Pablo, in Valladolid, completed in 1463, every inch of which is elaborately and beautifully carved, displaying groups of figures, pinnacles, foliage, and diapers in wild but not inharmonious profusion.

German influence is strikingly obvious in the design, and it has been attributed to a German architect. Mr. G. E. Street ("Some Account of Gothic Architecture in Spain") thinks it may possibly be the work of the artists Gil de Siloe or Diego de la Cruz, who wrought under Juan de Colonia and his son at the monuments and Retablo in the Convent at Miraflores.

DERWENT HALL, DERBYSHIRE.

Derwent Hall is a somewhat extensive shooting-box of the Duke of Norfolk, E.M., situate about thirteen miles from Sheffield, in the fertile valley of Derwent Dale, and surrounded by the Derbyshire moors. Originally the property of the Balguys, it passed into the hands of the Newdigates, from whom it was purchased by the present noble proprietor, who decided to pull down the later additions, which were of a farm-house character, and to increase the buildings in style with the genuine old work. The present buildings include the entrance-hall, with the duke's study on the left, all beyond this being domestic quarters, and on the right, beginning at the front, the duchess's boudoir, the library, dining-room, and drawing-room, of which we have already given an internal view, the sacristies, and the domestic chapel, a simple but massive building in the Early English style. The domestic quarters contain kitchen, scullery, housekeeper's room, still-room, butler's pantry, servants' hall, pantry, larder, dairy, game larder, gamekeepers' rooms, &c. On the two upper floors are thirty rooms for bed and dressing, &c. The stables contain fifteen loose boxes and stalls, a treble coach-house, 28 ft. by 18 ft., two harness-rooms, stablemen's mess-room, and three bedrooms. The stables are fitted up by the St. Pancras Iron Co. in a simple but substantial manner, the woodwork for stalls and loose boxes being of teak, and the walls lined with the Farnley Co.'s buff and brown glazed bricks. All the sitting and bed rooms are lined with panelled wainscot oak, principally carried out by Messrs. Dealy & Horner, of Sheffield, but the drawing-room and dining-room, which are carved, are by Messrs. Farmer & Brindley. The doors are furnished with simple iron handles, finger-plates, and hinges, treated by Professor Barff's process, and harmonise well with the solid-looking oak. These fittings, together with the stained glass of the chapel, were supplied by Messrs. Hardman & Co., of Birmingham. Dog-grates are used throughout the house, the fire-places being lined with tiles of different designs.

The walls are composed of the local hard stone, which is speedily assuming the grey tints of the old work, and thereby will soon render the building all in unison. The roofs are covered with the old-fashioned grey slates, and this further helps to carry out the Duke's wish to keep up the character of the works throughout.

The whole of the works have been carried out under the supervision of the architects, Messrs. Joseph A. Hansom & Son (now represented by Mr. Joseph Stanislaus Hansom, F.R.I.B.A.), of 27, Alfred-place West, South Kensington; Mr. James Firth is the clerk of works. The Hall is situated so far from most of the depôts of material that the later works have had to be carried out without a contract. Messrs. Robert Dennett & Co. were, however, the contractors for the chapel and part of the house. Later the labour has been obtained by the clerk of works, and goods have been supplied by separate tradesmen, amongst whom in addition to those already referred to, we may mention Mr. Corrie, of Sheffield, plumber; Messrs. Edmundson, of Westminster, electric bells; Messrs. S. C. & J. L. Ellis, of Sheffield, hot-water apparatus; Mr. Chadwick, of Sheffield, plasterer; Messrs. Minton & Hollins, tiles; Messrs. Stuart & Smith, dog-grates and tiles; Messrs. Longden, of Sheffield, kitchen fittings; Messrs. Chew & Sons, of Stroud, iron casements.

NEW BOARD SCHOOLS, ROCHDALE.

The Rochdale School Board, in January last, advertised for competition drawings for the erection of new schools to accommodate 500 children, and the appeal was responded to by about thirty-eight architects. The committee, after consideration, selected the design with the motto "Utility," by Messrs. Maugnall & Littlewoods, architects, Manchester, who were instructed to procure estimates and carry the work out. The contract has been let to Messrs. Peters & Sons, builders, Rochdale, and the amount will be under 5,000*l.*, including fittings and architects' commission. We give view and plan.

The mixed school for boys and girls is situated at the south end of the site in Derby-street, and is 60 ft. in length by 20 ft. in width, and 20 ft. in height, and accommodates 120 scholars, allowing 10 ft. of floor space for each scholar. Directly communicating with the school-room are four class-rooms, two of which will accommodate fifty-five, and the other two thirty-five scholars each, allowing 10 ft. of floor space for each scholar.

Hat and cloak rooms and lavatories are provided for each sex in immediate connexion with the entrances.

The infants' school is situated at the north end of the site in Derby-street, the principal approach being from this end. The school is 48 ft. in length, by 20 ft. in width, and 20 ft. in height, accommodating 120 children allowing 8 ft. of floor space for each. Two class-rooms, each accommodating forty children, communicate directly with the school-room. A white-glazed brick dado, 4 ft. high, will go round each school-room and class-room, which will have a pale green tinted band of another colour at the top and bottom. The ceilings to each school will be splayed on each side. The roof principals, being exposed to view, are in pitch-pine, varnished.

The boys' and girls' latrines are situated adjoining to the west boundary wall, and will be on the dry-earth closet system, properly ventilated. The infants' latrines are situated near to the back school-entrance, and are approached by a covered passage.

The schools and class-rooms are to be heated by hot-water pipes.

A louvred ventilating-shaft is fixed on the roof over each school, and communicates with openings in the ceiling regulated by doors which open and close with pulley and cord. Fresh air is introduced every few feet along the walls of each school, at a height of about 7 ft. above the floor, by means of Sherringham's ventilators, and foul air is to be let out at the ceiling level through Boyle's talc ventilators.

The windows are also adapted for the free admission of fresh air by the simple plan of hanging the top part to fall inwardly (regulated by cord and pulley), and the lower parts, being sashes, afford means of cleaning.

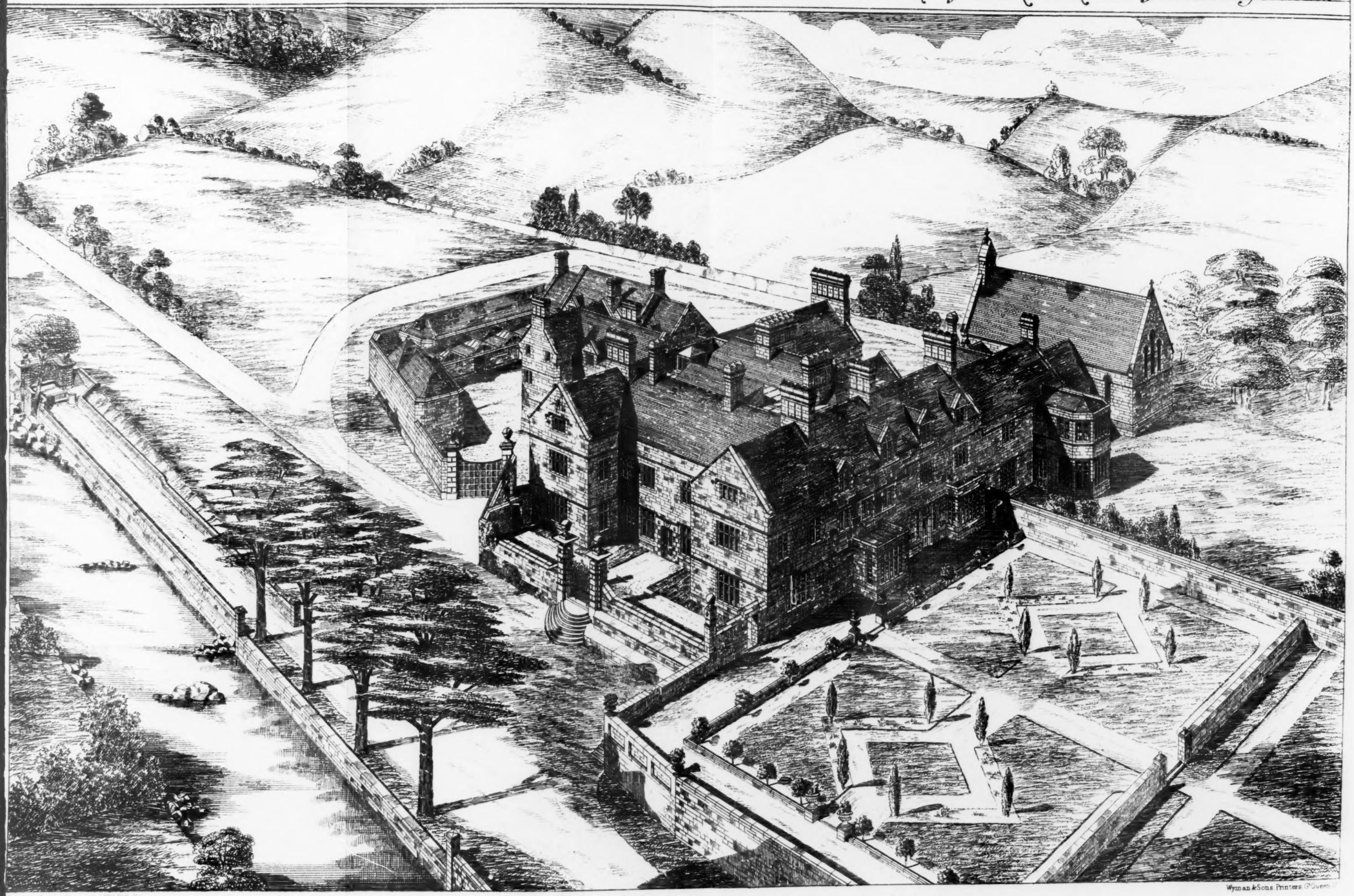
The elevations are faced with stock bricks, with masonry sparingly introduced where most required to throw off the water, namely, to stringcourses and sills and the upper part of cornices; the rest of the ornamental work will be executed in red terra-cotta.

The roofs will be covered with green Welsh slates fixed to yellow pine sawn battens. The ridges are of red Staffordshire crested tiles.

The internal joiner's work, such as doors, &c., is to be of pitch pine, varnished.

Mr. John Churchill, who, in company with a companion, had been accidentally drowned a few days previously at Sidmouth, Devon, was buried there on the 17th inst. Several hundred of his fellow-workmen and friends followed him to the grave. Mr. Churchill was only twenty-eight years of age at the time of the lamentable occurrence. He was out-door foreman to Mr. Harry Hems, of Exeter, having succeeded, in that position, the late Mr. Stephen Shute, whose death was referred to in the *Builder* for September 18, 1880.

DERWENT HALL. *Derbyshire as restored and enlarged for His Grace the Duke of* NORFOLK. *E.M. J.A. Hansom & Son. Archts*



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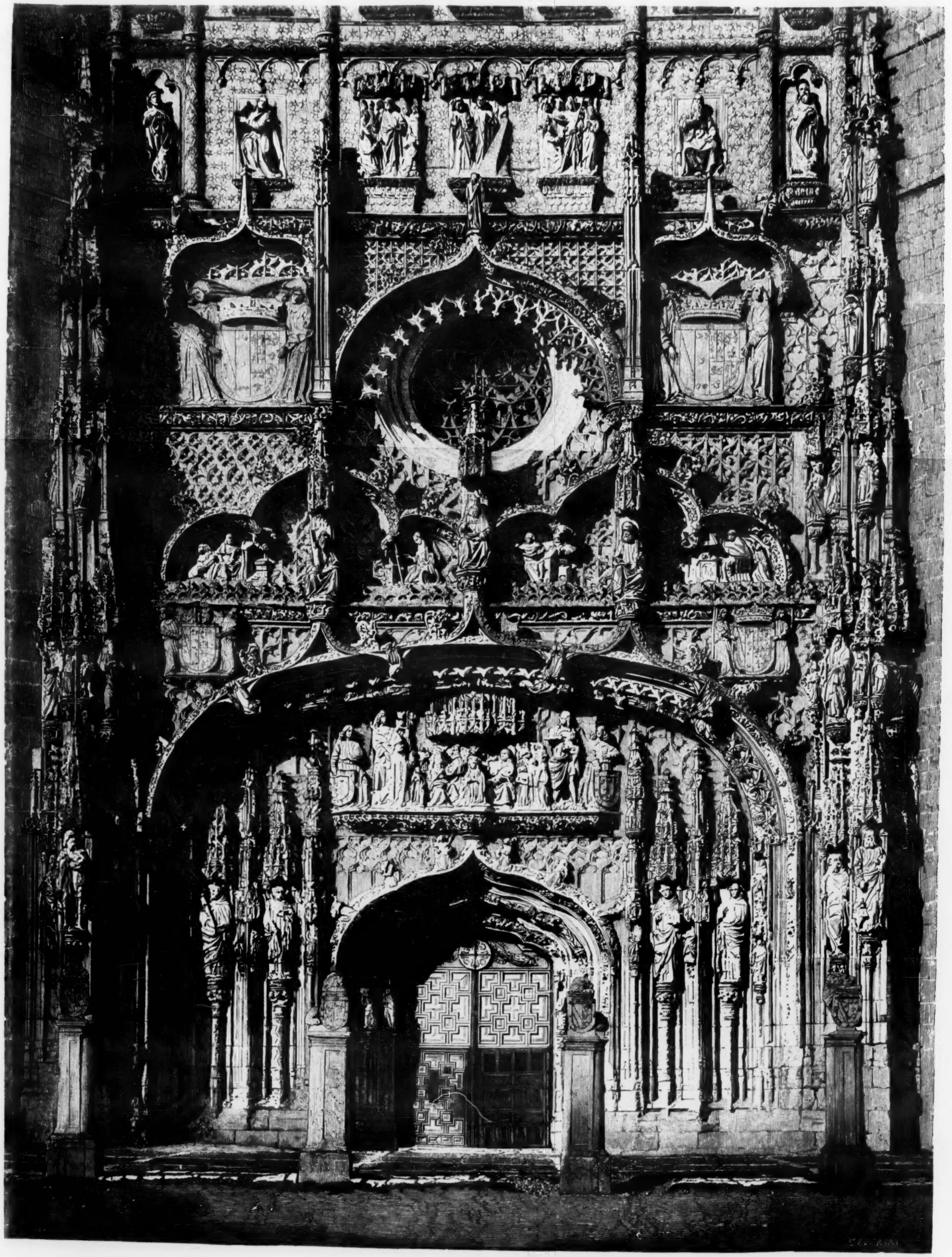
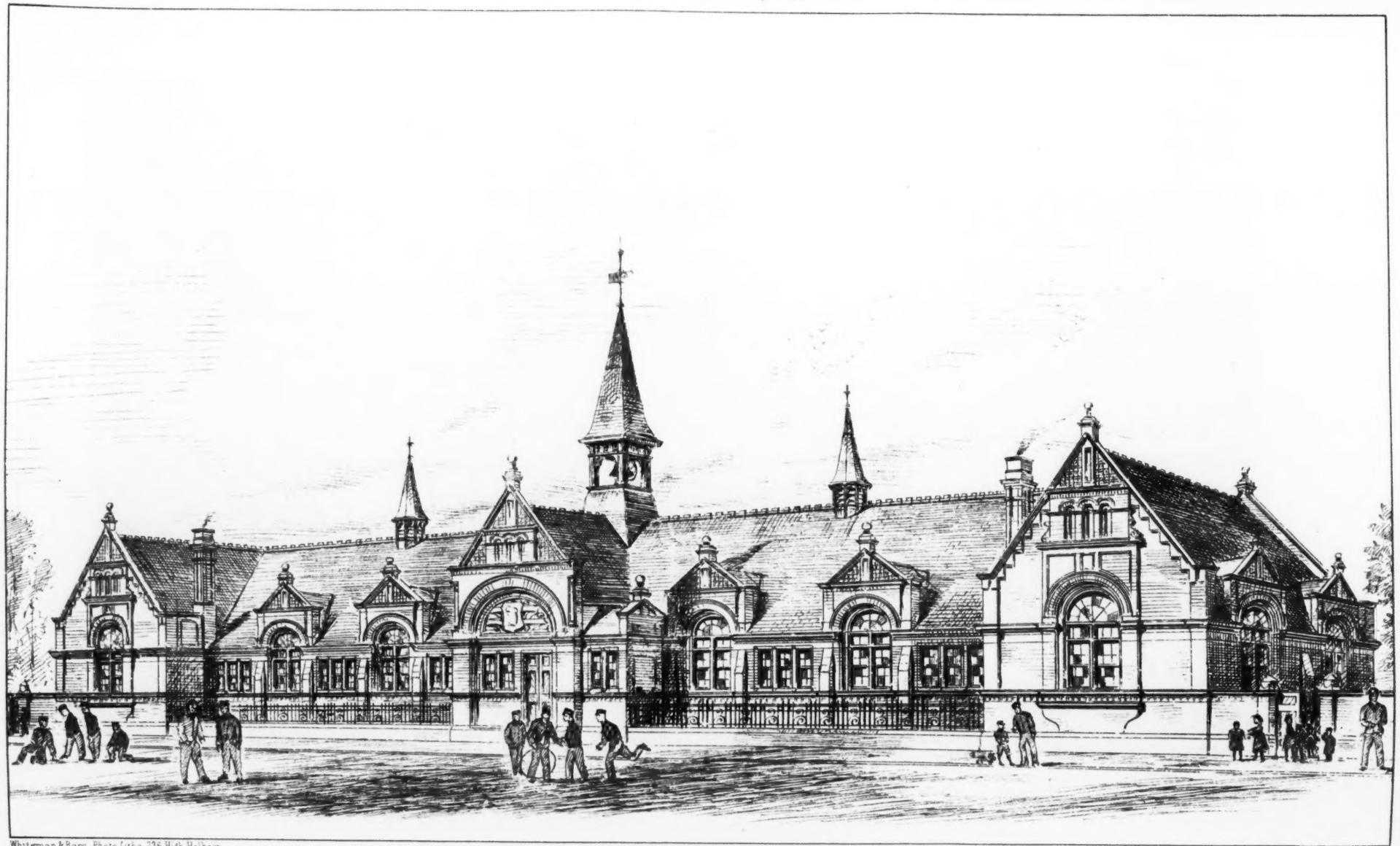
Bowman & Bowes, Photo-Litho, 326 High Holborn



THE EX-CONVENT OF SAN PABLO, VALLADOLID, SPAIN: PRINCIPAL PORTAL.



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NEW BOARD SCHOOLS, ROCHDALE.—MESSRS. MANGNALL & LITTLEWOODS, ARCHITECTS.

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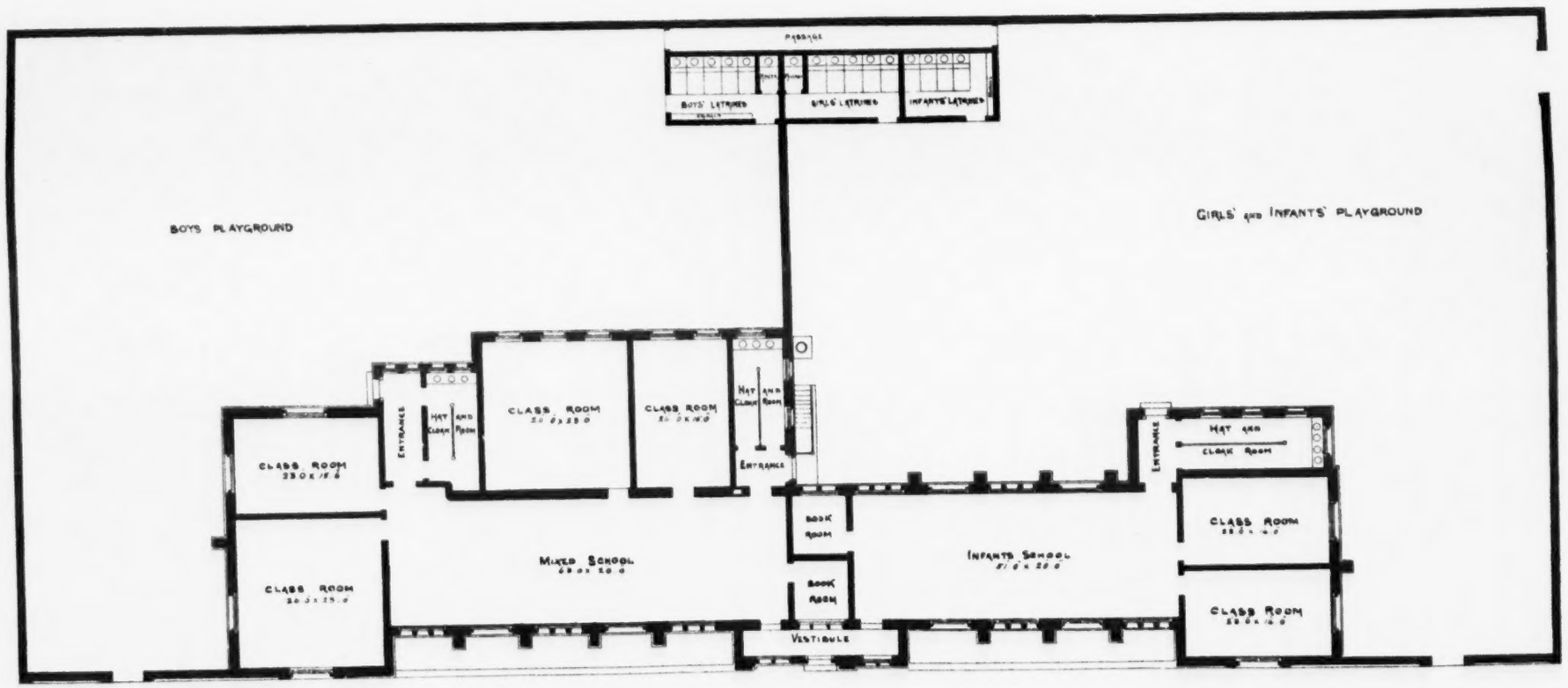

GROUND FLOOR PLAN

NEW BOARD SCHOOLS, ROCHDALE.

Whiteman & Bass, Photo Litho 236 High Holborn

Wyman & Sons Printers 74 Queen St

EDUCATION AND EYE-SIGHT.

The reports of the third examination in technical education, held by the City and Guilds of London Institute, show a considerable increase in the number of students. In 1879 the number was 202; in 1880, 816; in 1881, 1563. The successful candidates were respectively 151, 515, and 895; and the localities or centres of examination were 23, 85, 115. The towns furnishing the greatest number of successful candidates were Bolton, Manchester, Newcastle-on-Tyne, Huddersfield, Oldham, Crewe, and Gateshead.

Of the 1563 candidates for a pass in the present year, only 213 took up more than a single subject of them, 126 were examined in mechanical engineering and some one other subject; 43 in flax and cloth manufacture, and 16 in fuel and iron and steel. The subjects named show the thoroughly useful objects of the Institute. About 770*l.* will be distributed this year to teachers, and 240*l.* in money prizes, besides thirty-eight silver and forty bronze medals. Among the subjects in which examination will be held in 1882 are breadmaking, distilling, linen-bleaching, linen manufacture, jute manufacture, electric lighting, electrical instrument making, metal plate work, and weaving and pattern designing. Flax will not be treated as a separate subject. It is, however, one on which in the present year the answers of the candidates have been pronounced by the examiners to be generally unsatisfactory. A winter-class of lectures, including laboratory and workshop instruction, will be given at the temporary classroom of the Institute, in Cowper-street, Finsbury. They will include the subjects of fuel and illuminating agents, distilling, metals and metallic compounds, electric lighting, transmission of power, electrical instrument making, and electrical laboratory apparatus. There will also be evening trade classes in bricklaying, metal platework, masonry, carpentry and joinery, sanitary engineering, house decoration, and modelling. In contrasting this broad scheme of useful education with the merely literary standards of the Board schools, it may be well to call the attention of the examiners to the eyesight of the pupils. How far this may be affected by the evening classes is a question of no slight importance to the future welfare of the students. The inquiry is suggested to us by the fact that the very journals which announce the programme of the City and Guilds of London Institute happen to contain an extract from a German paper showing the immense deterioration of the eyesight of the children in Germany, which is attributed in great measure to the small crabbed print of the school books, printed in the German character. Myopia prevails among these unfortunately over-educated little mortals, in exact proportion to the advance of their studies. Over an average of 10,000 children, from five to 11 per cent. in the elementary classes proved to be shortsighted. In the next grade of schools for girls the proportion rose to from 10 to 24 per cent. In the *Realschulen* it is from 20 to 40 per cent.; in the Gymnasia from 30 to 55; and in the two highest classes of all, between 35 and 88 per cent. Out of 600 students of theology at Tübingen 79 per cent. suffer from myopia. The question may occur how far an excessive use of tobacco has produced a hereditary weakness of vision, but the real practical value of that learning which is acquired at the cost of eyesight is to our view extremely problematical.

THE MOSAICS IN THE CATHEDRAL AT AIX-LA-CHAPELLE.

Early last month the mosaic decorations in the cupola at Aix-la-Chapelle were completed. The subject represented is that of the "Court of Heaven" as described in the Book of Revelation, with the twenty-four elders offering homage. The work partakes somewhat of the nature of a restoration, for it is on record that such mosaics once existed and were destroyed.

As soon as the work was decided on, Baron Bethune, of Ghent (according to the details before us), undertook to furnish the designs, in which it was intended to follow as closely as possible the outlines given by historians of the original mosaics. The changes made are only in points of detail, such as the omission of the seats of the elders,—which, as their owners were represented standing, must in their emptiness have produced an ungraceful and monotonous effect in the original work. The execution of the designs was entrusted to Dr. Salviati, of Venice, about whom our readers have often heard.

Professional and general opinions seem agreed as to the success of this work, in which simplicity of design united with brilliancy of colour produces a striking effect. From the octangular construction of the dome, and the fact of the light being thrown upwards from the eight windows, the effect is heightened in a singularly effective manner. The comparative rapidity with which the work has been executed speaks well for the suitability of Salviati's process for modern requirements; and when we consider that the space covered is 3,000 square feet, the time occupied seems relatively short. The whole has been done within two years, we note, although the time allowed by contract was three years. This rapidity is only attainable by the conjunction of material, financial, and technical facilities of the highest grade. In the different processes of manufacture there are, it is said, the most recent improvements; but the chief advantage of the system is in a process described at some length in the notice before us.

The ancient method of fixing mosaic work was to cover the wall under treatment with a coating of cement, and insert the pieces separately. This system (still in operation at Rome) only allows two or three workmen to be engaged at any one time, if due regard be given to regularity of effect. The Salviati process consists in the distribution of various parts of the design amongst different workmen at the factory. Each part of the design is pasted on paper, the reverse of the blocks being outwards, and thus when being placed in position it is only necessary to bring the separate sheets and fix them into the cement. The removal of the paper from the face of the blocks is, we presume, easily accomplished. Apart from the advantage of rapid execution, it is remarked that the uniformity and regularity of surface (so necessary in mosaic work) are much more easily attained by this method than when each block has to be fixed separately. Of course, the saving of labour allows of a proportionate reduction in the cost of the new system as compared with that of the old.

There remains, however, the question of durability to be glanced at, and under this head, we notice that although some of Salviati's mosaics have been twenty years in position, they are as firm as when first executed, although in some cases exposed to unfavourable climatic and atmospheric influences. The testimony of the late Sir Gilbert Scott is cited in the remarks before us in support of this assertion, with respect to work executed under his direction, such as the Wolsey Chapel at Windsor, the Albert Memorial, &c.

It is suggested that the remaining portions of the octagon should be decorated in a similar manner. Its present undecorated state is to be changed, and the effect produced by the mosaics overhead leaves no option to the chapter but to make the rest of the Emperor Karl's chapel in harmony with the dome. According to the *Echo der Gegenwart*, "Germany has been enriched by a noble work which meets not only the religious but also the artistic requirements of such a task. Aix-la-Chapelle thus offers a new inducement to art-loving strangers to pay the city a visit."

NEW BRIDGE AT SAGAN.

The relative advantages of wooden and stone bridges as to cost of erection and of maintenance form the subject of a statement in a foreign contemporary. The town of Sagan, in Silesia, is now erecting, at a cost of about 10,000*l.*, a sandstone bridge with five arches of sixteen yards and a half each in span, the roadway being nine yards and a half across. The life of a massive bridge is estimated at 300 years, and the cost of maintenance is reckoned at a quarter per cent. per annum, the renewal of pavement forming the bulk of this charge.

The wooden bridge now being replaced was erected in 1849 at a cost of 2,000*l.*; repairs during the thirty years have cost 2,500*l.* From experience it has been found that about thirty years is the average duration of a wooden bridge; hence in a century, the process of building would have to be repeated twice more. The total expense would have to be counted as nearly 15,000*l.*

SUSSEX ARCHÆOLOGICAL SOCIETY.

This Society had its excursion the other day to Ashburnham, and the proceedings of the day were very successful, although the weather was not altogether propitious. The gathering-place was at Pevensey, whither the members with their friends flocked from all parts. A large number assembled, to be further reinforced at Ashburnham, where about 350 persons mustered in front of the church. The arrangements for the excursion had been made by a sub-committee consisting of the honorary secretaries, Rev. W. Powell, of Newick, and Mr. F. Barchard, of Horsted Place, and Mr. Robert Crosskey, Mr. J. C. Lucas, and Mr. Griffith. The train reached Pevensey at about eleven o'clock. The visitors repaired first to Westham Church, in the vicinity of the station,—a plain but rather interesting old church,—over which the party were conducted by the vicar, who proved a most amiable *cicerone*. The church, which is a large stone structure, built partly in the Decorated style, dates back to the year 1539. It consists of a chancel, nave, and two chapels, that on the south being dedicated to St. Katherine. From Westham the party proceeded to the fine ruins of Pevensey Castle, which is one of the most perfect of castellated remains of Roman origin. The outer walls of the castle inclose an area of about eight acres, and are almost 20 ft. in height. In the interior is a smaller fortification of a quadrangular form, with round towers, and which was once entered by a drawbridge. The circumference of the outer walls is about 260 rods, and they must at one time have been of immense strength. A few of the party, who had made good use of their time, went on to Pevensey Church, a fine and interesting structure of considerably greater age than Westham, and which was much admired. According to the programme, the Rev. Mr. Powell was to have read a paper on this church, but, as is too frequently the case on such occasions, the programme had to be curtailed for want of time. The party then took to the carriages, and soon left the quaint old town behind them, crossing that flat marsh country,—there pronounced "the Mash,"—towards Ashburnham. After about half an hour's drive, revealing some interesting sights in the distance, such as Hurstmonceux Castle, one of the oldest brick buildings in the county, the seemingly small, but scattered, village of Wartling was reached, and a halt was made to inspect the little church, which lies far away from the main portion of the village, in one corner of the parish, something like five miles from the opposite end. The Rev. Dr. May, acting as *locum tenens* for the Vicar, was awaiting the arrival of the party to explain the principal features of the church. A well-preserved Catherine-wheel window, and a Pelham buckle of more than the ordinary size in the outer wall, are worthy of notice here. The wooden spire is rather a rarity in Sussex. The ride from Wartling to Ashburnham, leading through pleasant lanes and fine woodland scenery, was very enjoyable. There was Hurstmonceux Castle to be seen, and Windmill Hill, the seat of Mr. Curteis, and as the ridge of high land was crossed the openings in the green woods and plantations revealed some charming views. The Vicar (the Rev. Rose Fuller Whistler) was waiting outside the church at Ashburnham, and proceeded at once to show the visitors first round and then over the church, explaining its various features of interest. The church was rebuilt in 1663; and one of its features is that in all the windows the mullions are of oak instead of stone. The Vicar read a paper on the church, in the course of which he said: With the exception of the tower, the whole of the parish church of Ashburnham was rebuilt in 1663 by that well-known cavalier John Ashburnham. The church consists of a tower, a nave, and a chancel with two side chapels to its north and south. The nave is entered from the tower by seven steps, and from it there is a similar approach to the chancel. The effect of this arrangement is extremely striking, the sacrarium (altar) standing out in grand relief as you approach it from the west end of the building. A somewhat steep fall in the ground from east to west has thus been happily utilised, and if the construction is not unique, it has at least given an unusual character of grace and boldness to the building, with an effect of light and shade not often to be found when side aisles are wanting. This effect, however, is generally missed, as the entrance is usually made by the porch on the

north side of the church, the south side being enclosed by the walls and pleasure grounds of Ashburnham Place, and thus shut off from access in the ordinary direction. Unfortunately the entry by the porches gives an impression of commonplace meanness to a building which has its better features, and the first feeling of the beholder is one of disappointment. The tower, not unlike that of Battle Church, is built of local grey sandstone, and with its embattled turrets and ample buttresses, and approached as it is by a steep incline, is sufficiently imposing. A large and well-designed oak door, now showing symptoms of decay, is surmounted by a Tudor arch, the hood moulding of which displays the well-known Pelham buckle. A belfry window, lately "restored," mars the harmony of this portion of the building by the incongruity of its colour and design. There is also a gallery, the approach to which is from the tower by two flights of wide oak steps, probably introduced somewhat after the re-building of the church. Few persons will enter the nave of Ashburnham Church without at first feeling that here, if anywhere, the "restorer" might be admitted with advantage. The inconvenient high pews, the obtrusive gallery, the high unsightly pulpit, above all, the protruding compartment reserved for the household of Ashburnham Place, at once suggest the idea that an arrangement more ecclesiastical in character might certainly be welcomed. I venture to think, nevertheless, that there are many considerations which must be weighed by the person who would take upon himself the responsibility of such sweeping alterations. It is true the proportions of the Church would stand out in full and better relief, and that the accommodation would be greater and more convenient; but, on the other hand, we should lose the original character of one of the few churches rebuilt and arranged in the reign of Charles II., and it might be difficult to find another specimen so complete of a church remaining fitted up exactly as it was directly after the Restoration.

The paper having been read, and the various points of interest connected with the church having been seen, the party were conducted to the mansion of the Earl of Ashburnham, where they, previously to being shown through the various apartments, partook of refreshment, which the noble lord had kindly provided. The party entered by the west door, in the entrance-hall of which are hung several very fine portraits of the Earl's ancestors, and other celebrities of days gone by, amongst them King Charles I., Queen Elizabeth, Mary Queen of Scots, Prince Rupert, and the Earl of Marlborough. The majority of the portraits here are by Sir Peter Lely and Sir Joshua Reynolds. After leaving the west entrance-hall the visitors were conducted to the manuscript library, which contains some very fine specimens of ancient manuscripts, dating back as far as the fourth century. Other rooms contain pictures by Rembrandt, Vandyck, Salvator Rosa, Gainsborough, and other masters.

The annual dinner took place in the afternoon. Upwards of 270 persons sat down to table. The Rev. R. F. Whistler took the chair, in the absence of Lord Ashburnham.

MANAGEMENT IN THE WORKSHOP.

EVERY week there are advertisements in the *Builder*, and kindred journals, for leading men in the respective trades comprised in builders' establishments. Each advertisement elicits numerous replies. Other journals copy the advertisements. The original number of applicants is by this means considerably augmented, and the selection of a fitting person is attended with hesitation and uncertainty. By degrees, the number is reduced to a likely few. Testimonials are sought, and duly received. All are, doubtless, genuine. Some are very satisfactory, and some are very commendatory. Upon the strength of the recommendation, and the amount of the applicant's self-assurance, a decision is eventually made. The accepted candidate is naturally delighted, and the employer heartily glad to have settled the matter. The situation is entered upon, and the truth of the old proverb again proved. Then commence the preliminaries of the system. Complaints are made of the old hands. They are not punctual, or they are too slow. In time they disappear, their places being filled by the relatives and friends of the leading man. Some lodge with him; others fee him. All are dependent upon him, as he is dependent upon them. The next step is to compass the removal of other leading men; for rivals may not long be brooked. Words lightly spoken are magnified, and simple actions are distorted. Charges are privately made which are too readily credited, to the obvious disadvantage of the impugned. From the beginning the serpent's tongue has wrought mischief. Principled men, dreading the venom, shun the reptile, and, in order to do so effectually, withdraw the active interest they once took in the advancement of the business. Thus, there are at last left around the unsuspecting employer a band of designing men, co-operating for their own advantage.

The idea is not new. The system has been practised for years. Its name was derisively given to it long since, in consequence of some Cornish adepts affectionately styling each other "Cousin Jack." But not merely by Cornishmen has it been practised. Its influence has been felt far and wide. Early in vogue, it is in full swing now. Many a builder has gone to the wall, not knowing why. He laboured his utmost, yet he failed; and, out of the ruins of his business, he has seen his whilom leading man rear another. And, where this crowning consummation has not been experienced, the broken-down employer will readily admit that the leading man throve best on a decaying concern.

A condensed statement of some of the effects of this system may explain much hitherto imperfectly comprehended. The result of a leading man being pecuniarily dependent upon workmen is directly subversive of the employer's interests. It takes away authority from the former, and places the latter at the mercy of the men. Mistakes may be frequent, workmanship may be inferior, waste may be great; but the action of the foreman is paralysed, because his hands are heavily weighted with obligations. If his friends and relations were discharged, the consequences might be unpleasant, inasmuch as ruffled friendship often leads to mutual recriminations; but, however this may be, other friends and relations would necessarily have to be invited to a quiet shop and respectable home. Selfish interests are the strongest. Nearer to a man than an employer's welfare, is his own. When, therefore, a busy and confiding employer advances a selfish schemer to a position of responsibility, he practically transfers to that person a portion of his business. Master men have enough to do to obtain work, and manage works in hand. They cannot, if the business be of any magnitude, devote their time to the inspection of shops, so that they naturally have to trust much to others. They pay leading men superior wages to protect their interests, and they expect these superior wages to keep such men independent. If the system works ill, the ill is not readily detected; if old hands clamour of unjust treatment, their complaints are rarely considered. The leading man is empowered to act, and, possessed of the plausibility characteristic of the age of bluster and bounce, he stifles complaints and gains his end. He has the master's ear, and, paradoxical as the assertion may appear, it is comparatively easy in such a case to convert the shrewdest of men into the simplest of simpletons.

If the system removed, instead of retaining to the end of the chapter, unprofitable men; if it tended to promote discipline and improve workmanship; if it secured for the employer an efficient and a reliable staff, all might be well. But when it sets aside a foreman's authority, fills a workshop with his friends, and his house with workmen, it must needs militate against an employer; because, for an employer to be properly represented, it is essential for his leading men to be thoroughly independent and free from sordid considerations.

The engagement of a leading man is a matter of greater importance than many are apt to consider; for upon his integrity depends, correspondingly with his position, the success or failure of his employer's business. If a business is to prosper, there must be vigilance and diligence, combined with firmness. These are imperatively required in responsible men. Ability is desirable, but principle is essential. A gifted man without principle is a poor exchange for an honest man of average ability. (There is such a thing as having too-knowing men, as many have found to their cost.)

Under the one man, workmen are firmly and justly treated, local men are not discharged for strangers, nor married men discarded for "flusher" single men; work is impartially distributed; and if occasion arises for rebuke or a backday, workmen have but themselves to thank; moreover, whenever there is a necessity for a reduction in the number of hands, the oldest and best workmen are invariably retained. There is nothing sensational in this. The employer is protected; the foreman is respected; the workmen are contented: and all because a responsible man executes his trust in a trustworthy manner.

Under the other man, workmen are capriciously and unjustly treated; local men too often are discharged for strangers, and married men discarded for men who can better afford to be generous; and should there be occasion to dismiss workmen, those will certainly be retained upon whom he lives. There is something sensational in this. The employer suffers; the foreman gains money, if not respect; the workmen are the masters, with a constant job in view, and all because a leading man sacrifices position by renouncing principle.

The conclusion to be deduced from the foregoing impartial testimony of a dispassionate observer must be obvious to every employer, whether in a large way of business or a small. That the system is an evil, and an unnecessary evil, few employers of labour will deny. That precautionary steps should be taken to prevent its introduction, most employers of labour will admit. In large establishments, where there are a number of responsible men, it is to some extent held in check, because all these are not corrupt, nor removable, and sharp-sighted men as these can often see things to which employers are blind. If they do not speak, their knowledge is salutary. It is, however, necessary that exposure should follow detection, and it is at this point that difficulty arises in smaller firms. The situation is delicate and embarrassing. Most persons connected with the plausible and deceptive shrink from conflict with them, rightly imagining that a charge incapable of ocular proof had better not be preferred, since prejudice might be attributed to themselves, or some unworthy motive, whilst animosity and vindictiveness are certain to result on the part of the suspected. Morally certain that an employer is being wronged, circumstances render it advisable to remain quiet; and, as a rule, it is well to avoid, to the last extremity, any attempt to weaken the confidence reposed in another, though duty prompts the word, and honour bids one act. The employer should test his men, and judge for himself. He has himself to blame for much that happens. He may be too credulous, too confiding, too familiar, and then, instead of being a master, he becomes a dupe. Bounce should be estimated at its worth; credit should not be given to pretensions. The value of men is revealed in time; it is, therefore, prudent to treat a man from the first as he is always to be treated. Courtesy and consideration are due to every man, but familiarity is the invariable precursor of presumption. Independence must be insured by liberal wages; power given to maintain discipline and overcome factiousness, and sufficient encouragement accorded to generate interest; and then the same caution should be observed with him as with others. Every position has its peculiar temptations, and human nature is everywhere the same.

OBSERVER.

ST. MARGARET'S, WESTMINSTER.

I HAVE read the recent very interesting articles which have appeared in the *Builder* upon the past and present history of the Church and churchyard of St. Margaret, Westminster, with more than ordinary pleasure, and as the subject is rather an important one at the present time, I presume a few notes will not prove unacceptable to your readers. These notes are derived from the very valuable series of churchwardens' accounts and registers, the former commencing the 15th of May, 1460, the thirty-eighth year of Henry VI., and the latter January, 1538-9, the thirtieth year of Henry VIII., for the inspection of which I have been greatly indebted to the courtesy and kindness of the rector, the Rev. Canon Farrar, and the churchwardens, Messrs. Stewart Helder and Hockridge.

Extracts from the early accounts have already been published in the *Builder*, August 7 and 21, 1880, but it will do no harm, I think, to reprint the item of the greatest interest in the first volume, the entry recording the burial of the first English printer. It is recorded towards the end of the year 1491 in these words:—"Itm, atte bureyng of William Caxton, for iiij torches, vj^{s}. viij^{d}. Itm, for the bell atte same bureyng, vj^{d}." Your readers will find a full description

of this entry in "A Caxton Memorial," which was published in your journal just a year ago.

Speaking of "A Caxton Memorial" reminds me to call attention to the fact that our first English printer is about to have a little better monument at last in the church where he (and perhaps his father) was buried, than that mean-looking tablet which at present exists. Although the name and works of Caxton will ever prove the best memorial of him, yet as this is the age of memorial building, some of them by-the-bye being in anything but the best of taste, it is not surprising to find a word and plea for Caxton. And, if any one deserves to be remembered, he should certainly have the place of honour in the church where he was buried. But while saying this, I am sorry to say the only place of honour to my mind,—the great west window,—has been lost. And yet what has been a loss one way will prove a gain another. As you mentioned at the time of the publication of the "Caxton Memorial," Canon Farrar had hopes of filling in the great west window, at the cost of the Americans, to the memory of Sir Walter Raleigh, who, after his execution in Old Palace-yard, the 29th October, 1618, was buried in this church, the register recording the burial simply "Sir Walter Rawleigh, knight." After the publication of the article in your journal a year ago, it was decided that whoever raised 600*l.* first should have the honour of filling in the great west window. Consequently the race commenced in earnest, and I, among others, fully believed that the printers of England (Caxton) would have little difficulty in beating the Americans (Raleigh). But I regret to say the English printers do not appear to value the man they owe so much to, as our American cousins do their Raleigh; for while we could only raise the paltry sum of 400*l.*, they sent over a special ambassador with orders to fill in the window! And thus they exhibit once again their well-known activity and desire of doing anything promptly and well if they do it at all. The result being that, to my thinking, the only place of honour in the church for the man to whom every one,—even the reader of these lines,—is so greatly indebted has been lost, and William Caxton will now come off second best once more. And were it not for my good friend William Blades's "Memoirs of the Life of Caxton," he would, indeed, have been left out in the cold. However, the first English printer will have a memorial window in the church after all, and no one wishes it to be a really representative one of the good works of the man more than I do.

In a recent article you state that John Milton, the poet, was married in St. Margaret's Church. This appears to have long been a very popular belief, but it is an error. The banns were called in the church, as between "John Milton, of this parish, Esq., and Mrs. Katherine Woodcocke, of the parish of Aldermanbury, spinster," October 22 and 27, and November 3, 1656, but they were married the 12th of November following before Alderman Sir John Dethicke, within the City of London,—a fact which Col. J. L. Chester proved to Professor Masson, when that gentleman's "Life of Milton" was published years ago, and of which I am glad to see there is another edition now in the press. But Milton's second marriage was of short duration; the wife died after giving birth to a daughter, Katherine, and was buried in St. Margaret's, February 10, 1657-8. The child was christened here October 19th, 1657, and was also buried here March 20th following.

As among the remarkable men who have in one way or another been connected with St. Margaret's, and whose connexion is shown by the registers, which, by the way, are perhaps the most complete, as they form one of the largest series in England, you rightly mention Samuel Pepys, the well-known diarist of Charles II.'s time. He was married here. The entry reads: "Samuell Peps, of this parish, gent., and Elizabeth de Snt. Michell, of Martins-in-the-ffeilds, spinster. Published October 19th, 22nd, 29th (1655), and were married by Richard Sherwyn, Esq., one of the justices of the peace of the Cittie and Lyberties of Westminster, December 1st. (Signed) Ri. Sherwyn." Mr. Wheatley has recently published a very interesting volume about Pepys and the world he lived in.

With regard to the proposal to pull down St. Margaret's Church and rebuild it in Victoria-street, all I can say is that the proposal is likely to rest as a proposal, for it is one of the most extraordinary ever brought forward. The present church is neither in the way, ruinous, nor in want of a congregation, while the beauties of the Abbey can be very well seen without the removal. The only plea, therefore, is that the new church would cover a bit of the melancholy waste of Victoria-street, in which thoroughfare there are two churches already.

One item more and I will conclude these notes. That item relates to the churchyard of St. Margaret. After a long series of years there is some chance now of its being made a more pleasing place to look at than it has hitherto been. About an acre in extent, its dilapidated appearance has long been an eyesore both to the church and the Abbey authorities; but as the only way of remedying the evil was by obtaining something like 3,000*l.*, the amount required to plant and ornament the grounds, that step could not be readily taken. At last, however, Canon Farrar, the rector (who, a few years since, so successfully raised the necessary funds to restore the church), made another appeal, and the Government and Board of Works each promising a substantial donation, the remainder is now applied for from the public. As the work is a good one, and the laying-out and ornamenting the present very deplorable-looking ground will add credit to all those who share in its improvement, I am sure the Rev. Canon and the treasurer, Mr. Stewart Helder, of the Sanctuary, Westminster, will not appeal in vain.

It may here be interesting for me to note that in my collection of historical MSS. relating to the history of England and London, I have a warrant dated "at the Committee for the publique Revenue sitting at Westminster the 6th daie of May, 1652," directing the Receiver-General to pay to the overseers of St. Margaret (who sign for the same the 21st of July), "the sume of 3*l.* 6*s.* 8*d.* for the yeere ending in this Easter terme 1652 in lue of the yeerely benevolence bestowed by the late King Charles and his progenitors tyme out of mynde on the poore of Saint Margarett's parish, Westminster, by the handes of the Bishopp Almnors for the tyme being." This document is of more than usual interest, for it is signed by Humphrey Edwards, John Trenchard, Cornelius Holland, Henry Mildmay, and Nicholas Love; of whom Edwards, Holland, and Love were present at the sentence of Charles I., and Edwards was one of those who signed the memorable death-warrant for his execution.

T. C. Noble.

SUGGESTIONS IN DESIGN.

Sir,—Although I have the utmost respect for your opinion, and am greatly obliged to you for the favourable notice you gave of my work in Mr. John Leighton's "Suggestions in Design," perhaps you will permit me to endeavour to explain my meaning with relation to the geometry of nature, and upon the principle as laid down by Owen Jones, "that all ornament should be founded on a geometrical basis." This I quite agree with, and consider it to be in accordance with natural laws which are to be constantly perceived in nature. More than that, I think it could be established by close research that all mathematics and geometry are closely allied to laws which exist in nature.

In explanation of this affinity between nature and the science of numbers, I have observed (page 157) "that when any flower is formed upon a geometrical figure, or number, as the number five, for example, there are five sepals in the calyx and five petals in the corolla, and that these invariably alternate with each other. Besides this, there will be five stamens, alternating with the corolla; or if there are ten, as in the stone-crop, they are in two sets of five each, alternating with each other. If the stamens are of an indefinite number, as in the wild rose, they will still be a multiple of the number five. But, more than that, the number will be sometimes carried through the whole plant, as in the common bramble. In this instance the section of the stem is pentagonal, the leaves branch, forming a spiral line, from each alternate angle of the stem, and are formed each of five leaflets. The number of a flower will sometimes appear again in the seed-vessel, as in the three-celled seed-vessel of the lily; thus carrying on the threefold arrangement of the flower."

These are only a few random references, but when closely studied, it is certain that the relation of numbers and geometrical form to vegetable growth may be clearly established. If the subject were farther followed up, I believe that a geometrical basis could be found for nearly every object in creation; that although nature is apparently so irregular, yet every object is *planned* with mathematical exactness. Every plant grows from a central axis which when elongated forms the stem, and the leaves and branches are planned to grow out in a regular spiral twisting round the stem; or to branch in a cross-form, each pair of new leaves issuing at right angles with the last, the flowers and seeds following and carrying on the mathematical precision. Again, in the forking of sea-weeds and mosses, as well as in the crystallisation of snow, the angle is constant and invariable.

Even in the reticulation of leaves, each cell is arranged with geometrical regularity, and the whole surface is divided with mathematical accuracy, although carried out with such apparent irregularity.

This is not a new theory, for it has been long held by others besides myself. In 1865, when I first published my work on "Art Foliage," I then stated that "one of the most extraordinary circumstances in nature, and one which produces a constant charm, is the fact that nature is highly geometrical and regular, and yet, at the same time, it is so full of minor irregularities that they effectually conceal any stiffness or too great a precision in the development and expanding of its various parts. As was aptly observed by Professor Kerr upon the occasion of my reading a paper upon the subject at the Institute of British Architects, 'regularity in nature was carried out with, one might almost say, invariable irregularity, and in foliage there were two principles in constant operation, one being the regularity with which every object had been designed, the other the irregularity with which it was developed.' The branching of trees takes place upon perfectly regular plans, yet what in the development, during the progress of growth, can be more irregular? The forms of leaves and flowers are highly geometrical, and are formed upon the triangle, the square, the pentagon, &c., yet all are so modified and the variety is so great, that no two leaves or flowers can be found precisely alike. Where less severity, therefore, is desired in ornamentation, this principle in nature may be legitimately adopted by the artist."

In crystallisation, all the solid geometrical forms are to be found carried out with mathematical exactness, and yet not one of the forms will be discovered to be absolutely perfect. A drop of rain or a dew-drop is a perfect sphere, and yet is more or less imperfect as it may be affected by accidental circumstances. This is proved by the formation of sleet, which is the consolidation of the drop by a natural process during the act of falling. This applies equally to the spherical formation of our globe, as well as to every planet and star in existence, and yet not one may be found to be a perfect sphere. Thousands of other instances might be adduced, for even the human mind is naturally mathematical. This is frequently quite independent of education, and is often possessed by one more than another. One person, even among the most ignorant, will detect lopsidedness or unevenness much quicker than another; while to nearly every eye simple geometrical repetition is in itself pleasing and agreeable.

Is it, therefore, too much to say that all ornament, as in nature, should be founded upon a geometrical basis when such a law or instinct (or whatever we may call it) exists even in the human mind? I think not; although I must allow that the Japanese and some other styles dismiss (in a portion of their works) all geometrical precision, and adopt entirely the irregular. But is this really art, or if so, is it not of a low type, considering that it requires very little thought and possesses no design?

Pray, however, do not think that I condemn the irregular; far from it. When based upon the regular, I consider it the highest class of ornamental art. I have before said that "no art should be without this element of the picturesque, the irregular. The mind and eye are quiescent while viewing perfectly geometrical composition; there is a quiet satisfaction that everything is correct and according to rule; but engraft upon it the irregular, and we are drawn towards it with very different feelings. Before, it was a beautiful object, even and uniform; now, it has variety and freedom. If we there see the thought of the artist mind, and if it be fraught with life, it will light up that which is in our own, the eliciting of which constitutes the true 'poetry of art.'"

James K. Colling.

COST OF SOME GASHOLDER TANKS.

The following particulars, showing dimensions and cost of a certain number of gasholder tanks, may be found useful. Fuller details of one of the tanks would be valuable. Messrs. Aird & Co. were the contractors:—

London Gasworks, Nine Elms.—Diameter of concrete tank, 200 ft.; depth, 45 ft.; cost, 17,600*l.*

Phœnix Gasworks, London.—Diameter of brick tank, 218 ft.; depth, 44 ft. 6 in.; cost, 21,446*l.*

Gas Light and Coke Company, London.—Brick tanks—diameter of brick tank, 195 ft.; depth, 37 ft. 6 in.; cost, 15,000*l.* There are six similar tanks. Cost of same, 90,000*l.*

Leicester Gas Tank.—Two of brick, each 172 ft. diameter, and 37 ft. deep. Cost of each, 15,200*l.*, or 30,400*l.* the two.

Birmingham.—Brick tank, diameter, 185 ft.; depth, 41 ft.; cost, 18,190*l.*

FROM ABROAD.

The exports of window-glass from Belgium during the first four months of this year were 29,884,003 kilos., against 31,961,587 kilos. in the corresponding period of last year. Business with England, the United States, and China, shows a decrease, as well as the exports to Hamburg and the north of Europe generally. On the other hand, an increase is reported in the trade with Holland, Russia, Spain, Italy, Turkey, Roumania, Chili, and Peru.

A curious fact is noticed in the German press, which is not without interest to the building industry. At a small village on the Baltic, noted for its quietness, Prince Frederick Charles has had three block-houses erected for himself and his attendants. They are constructed of whitewood, the furniture being of the same material, and were made in Sweden. The ease with which the different parts are arranged to be joined makes this sort of house, it is remarked, particularly serviceable for temporary habitations on the seashore, or in mountain districts.

An institution for the higher technical education of those engaged in textile industry was recently founded at Crefeld. The erection of a suitable building has just been commenced, and will occupy two years. The city has given a site, and contributed 7,500*l.* towards the cost of erection. The plans are by the municipal architect, Herr Burkard, to whom the direction of the works has been entrusted, under the official supervision of the Government authorities at Düsseldorf.

THE NEW WOOL EXCHANGE BUILDINGS.

A large block of new buildings, connected with the recently-erected Wool Exchange, has just been completed in Basinghall-street, extending from that thoroughfare into Coleman-street. The site upon which the buildings have been erected is that known as Sambrook-court, which contained a number of old offices, all of which were cleared away. The Basinghall-street frontage is in the Renaissance style. The elevation is 72 ft. in height, a turret being carried to a height of 80 ft. above the ground level. The elevation, which is about 60 ft. in width, is faced on the ground-floor with Aberdeen polished granite, eight massive columns of this material supporting the upper portion of the frontage, which is in Bath stone, carved and decorated. The frontage has a range of five bay-windows to each floor. The main cornice at the top of the building is surmounted by a balustrade, and behind this is a Mansard roof, with dormer windows, and the cupola bell-tower, in which it is intended to fix a clock, and also, it is stated, a peal of bells. A special feature in the carving is that heads of several members of the present Cabinet, including the Prime Minister, Lord Kimberley, Sir W. V. Harcourt, and Mr. Chamberlain, are represented in the *façade*. Amongst other similar heads are those of the Lord Mayor, Mr. Hughes, of the Wool Brokers' Association, and Mr. Faithful, of the Merchant Taylors' Company. Other portions of the carving are symbolical of the Seasons, Agriculture, and Foreign Continents. The chief entrance to the building is in the centre of the Basinghall-street frontage, between the granite columns already referred to. There are four massive wrought-iron gates at the entrance, of elaborate design and workmanship. One pair at the carriage entrance from Basinghall-street, is 10 ft. in height and 6 ft. in width, whilst the other pair, giving access to the various offices in the buildings, is 6 ft. in height and 4 ft. in width. The fittings throughout the buildings of the large number of offices for tenants, are complete and costly. All the offices are warmed by Doulton's porcelain slow combustion stoves. In the basement, extending from Basinghall-street to Coleman-street, under the entire block of buildings, including the Wool Exchange itself, is an unusually large room containing an area of 10,000 ft., suitable for storage purposes, and which is easily capable of sub-division. There is a goods entrance to this apartment in White Horse-yard. The whole of the premises, from Basinghall-street to Coleman-street, including the Wool Exchange and the section of offices completed about twelve months ago, together with the buildings just finished, which complete the whole, occupy a ground area of about three-quarters of an acre.

The architect of the several buildings is Mr. John Gordon, under whose superintendence the whole has been carried out, Mr. J. Sim having acted as clerk of the works.

ARCHITECTS' CHARGES.

PARAIRE *v.* THE ALCAZAR COMPANY.

The following is a copy of the Referee's award in this case, particulars of which were given in our last:*—"In the High Court of Justice, Queen's Bench Division, between E. Lewis Paraire, plaintiff, and The Alcazar Company (Limited), defendants—Whereas by an order of Master Gordon made in this action, and dated 13th June, 1881, it was ordered that the following question arising in this action, namely, the matters of account herein, be referred for inquiry-report to me, Jno. Whichcord, or to such person as agreed upon by the parties, or in case of difference to be named by the Master. And whereas, by another order made in this action by Master Dodgson, dated 5th July, 1881 and made by consent of the parties, and upon reading the said order of 13th June, 1881, and upon the defendant company admitting their liability to the plaintiff except as to the amount due to him, and withdrawing the first paragraph of their statement of defence in the said action, it was ordered that the matters of account in this action directed to be referred for inquiry and report by the said order be referred for inquiry and report to me, the said John Whichcord, of Palace-chambers, Westminster, late President of the Royal Institute of British Architects, under Section 56 of the Judicature Act, 1873. Now, I, the said John Whichcord, having taken upon myself the burthen of the said reference, and having heard the said parties by their counsel and their witnesses, and evidence produced before me, do hereby report to the Court as follows: that is to say, that I have considered the matters of account in question in this action, and I find that the total amount due to the plaintiff in respect of the matters aforesaid was at the commencement of this action 1,043*l.* and no more. As witness my hand this 12th August, 1881.

(Signed) John Whichcord,
Referee.

Witness,—E. Edward Habutt, Merchant,
31, Lombard-street."

AN AUTOMATIC COUPLING FOR ROLLING STOCK.

Messrs. E. Thomas and S. Cowdery, gentlemen connected with the Railway Department in Sydney, N.S.W., have just perfected a most important invention, which has for some time stood the test of actual work on the Darling Harbour Railway Lines. Messrs. Hudson Bros., the eminent engineering firm, of Sydney, who are always ready to undertake and to carry out any improvements connected with railways, have taken great interest in the invention, and on the 1st of July invited a number of gentlemen to witness the second and final public trial of the coupling. Among those who responded to the invitation were:—Sir Henry Parker, Sir John Robertson, his Worship the Mayor of Sydney, Mr. G. Cowdery, the engineer of existing lines; Mr. R. H. Burnett, the locomotive engineer; Mr. J. Trevor Jones, city engineer; Mr. J. Barnett, colonial architect; Mr. A. Mountain, city surveyor; Mr. J. Rae, Under-Secretary for Public Works; Mr. W. Read, traffic superintendent. The constructor of the new coupling fully explained the nature of the invention, and stated that five fatal accidents had recently occurred, which might have been avoided if this invention had been in use. The testing train consisted of engine and tender, three trucks, and a break van. The coupling consists of a tumbling hook and adjustable link, which is strong, and stands out horizontally, but is capable of moving upwards, when the inclined plane on the projecting end of the hook strikes its underside. The strength of the hooks was fully and satisfactorily tested by attaching to the train about thirty trucks, many of them laden; whilst in motion, the trucks having the new coupling attached were frequently and easily uncoupled, and the general opinion was that the experiment was in every way satisfactory. Mr. Hudson expressed his conviction, before the large assembly, that the new coupling would be soon generally adopted. Patents have been taken out for Europe and the colonies.

W. C. T.

* See p. 250, *ante*.

THE BRAKE QUESTION.

Sir,—I think that it is time that the deplorable accidents which have occurred through the use of defective brakes should be thoroughly brought before the notice, not only of the profession of engineers, but also before that of the public. I can unhesitatingly say that the use of such a brake as Mr. Eames's would have obviated so fatal an accident as that which occurred at Blackburn a short time ago.

Unfortunately in England everything is ruled by influence, that influence being what in the United States would be called the influence of the "Almighty dollar."

The enclosed extract from the *Manchester Evening News* of August 5th may have a peculiar interest:—

"An exciting scene occurred at Miles Platting Station last night, a man named Samuel Wolstenhulme, factory operative, Middleton Junction, as well as the station-master (Mr. Mayo), and the inspector (Mr. Clough), at Miles Platting, nearly losing their lives. It appears that Wolstenhulme had been across the double lines to the booking-office, and as the 6·30 Middleton train was entering the station, he ran in front of it for the purpose of getting on. Jumping on the high platform, he missed his footing, and fell on his head on the stonework, stunned, falling from there on to the line. The affair was witnessed by both the stationmaster and the inspector, who sprang to the stunned man's relief. Both seized hold of him at the same time, but both slipped, and all three fell on to the line. Fortunately, the occurrence had been seen by the driver of the train, and the brakes were applied. The three men had a marvellous escape, the train stopping a few feet only from them. Wolstenhulme was seriously injured by his fall."

It is somewhat amusing to me to have it asked in a certain journal "if Mr. Campin has heard of Westinghouse's brake"; but it is beneath my notice. Francis Campin.

Sir,—I have read with interest your remarks in recent numbers of the *Builder* on continuous brakes, and on the Blackburn accident, and hope you will allow one who, as a constant traveller, takes an interest in the continuous-brake question, to make a few remarks. I do not think you are quite warranted in thinking powerful (and trustworthy) continuous brakes liable to cause danger. I myself live on the Brighton Railway, about 1,400 of whose passenger stock are fitted with the Westinghouse brake, and have been a constant daily traveller for more than fifteen months, and all this time, though very quick stops are made, I have never once overshot the platform. From the evidence, the Blackburn accident seems to have arisen from the driver's not applying the brake in time, and not by its failure to act. He was not accustomed to drive the Manchester express, and was not quite acquainted with the brake's action! He had evidently heard the brake was very powerful, and thought its stopping powers were unlimited, and so thought he could stop a train running down a steep incline at over forty miles an hour in thirty yards from a block on the line.* The sad result was not the brake's fault. I am afraid it is very likely his statement as to the failure of the brake was an excuse for his ignorant rashness.

The best continuous brake should not be used at all to stop at termini or important junctions, and this is forbidden by most railways. That it is never so used on the Brighton I can witness; the brake is applied some distance from the terminus, and the train runs in at a moderate speed, and with ample space to be stopped by

* Precisely the evil to which our article points.—Ed.

the hand brakes. As I said, however, the Westinghouse never fails, when applied in time, i.e., at 100 yards at thirty miles an hour, and a proportionately longer distance at greater speed. In Friday's *Times* it is stated a train fitted like the Manchester express was stopped in a space of 231 yards at forty miles an hour down a gradient of 1 in 82. This is a very short distance, and shows that the express driver must have been off his head when he attempted to stop at that speed in thirty yards. However, we shall doubtless have the matter made clearer when the Board of Trade report is published.

H. C. S.

CONDITION OF FAREHAM.

Sir,—Your correspondent, "Quæstor," has evidently found a "mare's nest" here. Fareham was one of the first places in England to adopt the Public Health Act, 1848, whilst far from being one of the worst in point of necessity; and it has had for over the last twenty years a most valuable system of drainage, water-supply, paving, lighting, streets and roads improvements, &c., in operation, equal in these respects to any other town of its size, and adopted and carried out before other towns of much greater magnitude.

The system of sewerage is known to the Local Government Board Inspector. It is the "Filtration" system, the solids being retained in tanks, removed periodically, and used as an agricultural manure. The effluent water, after filtration and deodorisation, passes out into the salt water, miles away from Portsmouth, and has no injurious effect whatever. There is not the slightest foundation for saying that the sewers are choked or the cellars flooded. In times of flood some exceptional difficulties have had occasionally to be overcome, but where is the place that has not difficulties at such times? Ours are exceedingly slight, and not to be mentioned in comparison. A flap-trap has been inserted in any case of back flooding, which is an effectual remedy.

With regard to the water supply, it is of the purest character, coming from the Portsdown Chalk Hills. The system is continuous during the day-time. It is turned off during the night to save waste.

The closing of one of the present churchyards and the provision of a cemetery is now the subject of correspondence between the upper and local Boards.

The sanitary rate has always been considered high here; it is now 3s. 8d. in the pound per annum, exclusive of poor-rates, water-rates, &c.

Fareham is mentioned in the directories, and is known to be one of the most agreeable and healthy towns in Hampshire; and, happily, no epidemic has occurred here for many years.

If "Quæstor" had applied to me, I could have given him any information; there would then have been no occasion for his troubling you.

Alfred Driver,
Clerk to the Local Board of Health.

"DAMP: A QUESTION."

Sir,—In building my house seventeen years ago, in Wimbledon Park, on gravel (not on clay), I took the following precautions against damp. Foundation on a yard of concrete up level with the excavation, two courses of slate above footings, land drain-pipe all round ditto, a dry area where the ground was against the house, 8 in. of concrete over the whole of the basement, with 2 in. of Portland cement for finish, a 9 in. cement skirting to ditto, no drains under the house. I mention all this to show I took great precautions against damp.

Well, the first three months after we got in the condensation was so great that the servants had a mop to remove it, and the tradespeople so dirtied the passages in consequence, that as a remedy the cook had a small quantity of mason's dust, and well payed the Portland cement over the surface. The condensation then ceased, and we have never had any trouble since.

H. F.

New Market for Liverpool.—At a meeting of the Liverpool Markets Committee, it was decided by seven votes to two to recommend the City Council to pull down the Theatre Royal and erect on its site a wholesale fish-market at a cost of 73,000*l*. The Theatre Royal, although said to be the best designed theatre in Liverpool, has latterly been altogether closed.

LIVERPOOL EXCHANGE STATION COMPETITION.

Sir,—Referring to my letter of last week to you, I will now attempt to perform my promise.

There is, sir, a wide difference in such competitions as this, and ordinary ones. Here was not a question of taste, on which we all may differ. The reason for this competition was to improve the existing discomfiture in *levels*, practicable inlets and outlets, &c.; and well we know that anything less than 1 in 20 must be out of the question for a 27 ft. rise on granite setts, yet nearly all competitors have got 1 in 15.

Did Sir John Hawkshaw desire to ignore existing facts, that such a gradient as 1 in 15 would not be sanctioned in such a case by any of his brother engineers?

I recently noticed an account in the *Citizen* of the new large buildings for Bishopsgate Goods Station (Great Eastern Railway), most important buildings, and there they have 1 in 27 for 17 ft. 5 in. rise.

Did Sir John overlook some of the designs by accident?

There appeared an able letter in *Engineering* of last week from Mr. Blackbourn, C.E., who after, to my mind, satisfactorily proving that the three premiated designs should be out of court on account of levels, exits, and entrances, asks if there is no design sent in to fulfil the conditions? I can honestly reply to this in the affirmative, by pointing out a design I feel almost certain must have been lost sight of, the motto of which is "Direct." It has a cab inlet and outlet where required, viz., opposite Moorfields, and of a practical gradient of 1 in 20, with passengers' thoroughfares at each important approach; Tithebarn-street with shops and offices; emigrants' accommodation ample, and cut off from passengers.

Architectural detail was, I anticipate, outside the question altogether; but in this design the elevations were simple and honest, and I take simplicity and stability of work to be all that is required for a railway station. The greater consideration should be the best convenience to be obtained for the public. Is there in this country any modern-built railway station having a gradient of 1 in 15 or a 27 ft. rise?

I am at a complete loss to see the grounds on which so able a man as Sir John Hawkshaw based his awards; it would be very satisfactory to know what they were. Surely the directors and shareholders will institute a more searching inquiry into these facts of levels, &c., for what I have stated are plain defects, and although I have particularised one special design, there may be others equally demanding attention.

I will say nothing about the three awards being made to three Manchester men, but it is certainly a coincidence.

A Non-Competitor.

P.S.—As Mr. Blackbourn truthfully points out, the Board of Trade requirement for raising a main country road macadamised with a rise of 18 ft., is a gradient of 1 in 20.

THE VERGERS OF YORK MINSTER.

The Very Rev. the Dean of York has written the following reply, we will not call it answer, to our correspondent "F. S. A.":—

I venture to think that it is scarcely fair that those who are filling responsible positions should be publicly assailed by anonymous correspondents in the newspapers, and I should be glad if the editors of all respectable papers would exclude such communications from their columns. As regards the vergers of York Minster, I can only say that I believe they are very anxious to perform their difficult and often delicate duties with courtesy and efficiency. I have from time to time received anonymous imputations concerning them, which I have treated with the contempt such communications deserve. The only complaint which I have received substantiated by names and dates I carefully inquired into, and found that the verger in question had simply and temperately carried out his orders, and that he had been very rudely treated. The visitors to York Minster comprise a large number of persons of various degrees of intelligence, and it must be very difficult to give information which shall be equally acceptable to persons of very different capacities and education. The anonymous correspondent of the *Builder* does not give us any clue as to his own mental capacity, or inform us what grade of information would have satisfied him; but I may say that, during my residence at York, many visitors to the Minster have afterwards been guests at the deanery; and many have gone from thence to the Minster and returned, and I have heard nothing from them but expressions of approval of the genial courtesy with which they have been treated by the vergers, and of the interesting information which has been imparted to them. If anybody, whether a resident in York or a stranger, has any complaint to make, I shall be at all times ready to hear it, to inquire carefully into it, and to give such redress as I feel that it deserves. At the same time, I feel myself bound to protect the vergers as long as they are doing their best to discharge the complex and difficult duties of their office from any frivolous, groundless, or cowardly complaints which may be made about them.

Arthur P. Purey Cust, Dean of York.

"THE ENGLISH LAND SYSTEM."

Sir,—The above is the heading of a letter appearing in your journal of the 6th instant [p. 192], signed "B. H. Thwaite," &c.

If you will allow me to make a few remarks upon your correspondent's suggestion (No. 1) in that letter, I shall feel obliged.

Mr. Thwaite suggests that there should be "such an alteration of the land laws as would make it possible for any farmer to become possessed of the land he cultivates in a certain number of years," &c. Such a consummation is possible even now, provided, of course, that the present owner of a farm thinks proper to sell it to his tenant.

Now, does Mr. Thwaite mean that he wishes a law made to compel the owner of a farm to sell it to his tenant "in a certain number of years," if the tenant desires it? If he means that, he is advocating a very dangerous doctrine, and one possibly that he might repudiate if he saw the working of it; for he may be sure that other interests beside that of the ownership of the land would come to be dealt with in the same manner when once such a course was commenced. Tenants and hirers of every description of property would want it to be made possible that, "in a certain number of years," they may become possessed of the ownership of the property they rented or hired, and, following the same principle through all the affairs of life, we should arrive at the very acme of confusion.

The views I have set forth are, of course, patent to yourself, sir, and your correspondent himself may, as much as I do, deprecate the full outcome of his suggestion, if it was ever made the law of the land.

I could remark upon other portions of Mr. Thwaite's letter, but it would trespass too much on your valuable space.

H. M.

LAND IN ENGLAND.

Sir,—It is very satisfactory to learn, on the authority of the President of the Board of Trade, in his speech at Ipswich, a few days ago, that "our principal industry is still the production of wheat," and the statement may serve as an antidote to the gloomy view expressed by your correspondent, "A Hampshire Man," in a recent issue [p. 93], who seems to think that, agriculturally at least, England is used up.

I am not one of those pessimists who have adopted that view, because I do not choose to ignore the fact that the succession of bad harvests we have experienced in England is, in the natural course of things, not likely to continue. The years of famine will assuredly be succeeded by years of plenty. What I fear most is that when the favourable seasons come, we shall not be in a position to take advantage of them. Our land is gone and is going clean out of cultivation. The complaint is in every county that agricultural land can neither be let nor sold. As a consequence, the income derived from land is, both to the owner and cultivator, either completely gone or has become very much reduced. To those limited owners who have only a life interest in their properties, and cannot therefore sell, and have no inducement or means to improve, and have besides in many cases heavy charges to meet for dowries and settlements, the position is very trying. This class of owner, which is much more numerous than is generally supposed, deserves our sympathy and assistance. I should propose to invest every present owner with a power of absolute disposal, and wherever there are settlements charged upon his land, he should have the option of disposing of the land provided he invested an equivalent in Consols or in Government annuities, either of which are certainly equal in security to the land itself. If he have an absolute power of disposal of his land, we may naturally expect in time to find that the younger children will get a share with the eldest, and if all land is compelled to have a registered title, we ought to have cheap and easy conveyance. With these changes and some fair average harvests, such, as I am thankful to say, we are likely to have this year in the Midlands, a desire to return to a country life and the cultivation of the soil will be a general feeling.

E. Grimes.

COCOA-NUT FIBRE MATS.

Sir,—A recent number of your paper contained a notice of the Furniture Trades Exhibition at the Agricultural Hall. I was in charge of Stand No. 1 of Messrs. Treloar & Sons, of Ludgate-hill, whose exhibits are noticed by your representative. The well-known high character and powerful influence possessed and exercised by the *Builder* induce me to ask respectfully the favour of space for a word of explanation, that I would gladly have given to your representative had an opportunity presented itself.

In your notice it is stated that "the first stand, for example, exhibits Messrs. Treloar's mats, some of which are in process of manufacture. They are excellent things of their class, as every one knows; but in those in which variety of colour and some slight ornamental treatment are adopted, we cannot but be struck with the raw and disagreeable tones of the colouring; yet these are from a firm which largely deals in importing Eastern rugs and druggets. Surely their own imports ought to teach them more in regard to form and colour in work of this class."

I presume that the "Imperial" mats shown are here referred to; if so, their implied defects as regards variety of colour, ornamental treatment, and character of design, are easily explained. Cocoa-nut fibre is an intractable material in its natural state; but an unscrupulous use of dye stuffs, and even the process of bleaching, would greatly extend the scope for varieties in colour and design, and might even make it possible to imitate the colours and designs of Eastern rugs and druggets, but at the expense of the non-absorbent character, strength, and durability of the material, which by bleaching and dyeing is made soft, limp, and flabby. The agents used in the bleaching process are sulphuric acid and chloride of tin. Dr. Letheby and other eminent chemists have expressed their professional opinion that bleaching destroys the durability of the material.

The mats we are referring to are made entirely of cocoa-nut fibre, unbleached, and without the application of any dye stuff whatever. Such varieties in tone and design as are obtained,—the range is necessarily limited,—are by the use, in its natural state, of fibre imported from different tropical countries and islands, the brightest colour from Cochin China, the darkest from the Fiji Islands, and the middle tints from Ceylon and Japan.

It is hoped that as good use as is possible is made of these materials for slight ornamental treatment; if not, the goods are fairly open to adverse criticism.

J. Mould.

STAINED GLASS.

London.—A memorial window to the late Mr. Joseph Mills has been recently placed in the Church of St. Stephen, East India-road. The three lights contain the subject of "Our Saviour preaching from the Ship," with appropriate emblems in the tracery above. The work was executed by Mr. George Rees, of Lamb's Conduit-street.

Leire (*Lutterworth*).—Three Munich stained-glass windows, by Messrs. Mayer & Co., have lately been erected in the parish church of Leire, near Lutterworth. They represent figures of St. Peter, St. James, and St. John, and are in memory of various members of the Richardson family.

CHURCH-BUILDING NEWS.

Brighton.—The Church of the Annunciation, Brighton, was reopened on the 7th inst., after enlargement from plans prepared by Mr. Scott, of Regency-square, under whose supervision Messrs. Cheesman & Co., builders, have added to the church on the south side an aisle capable of providing accommodation for about 200 persons. A new choir-screen has also been erected.

Shipbourne.—On the 6th inst., the Archbishop of Canterbury consecrated the new parish church of Shipbourne, Kent, situate midway between Tonbridge and Wrotham. The church has been rebuilt at the cost of Mr. E. Cazalet, of Fairlawn. The building is Early English in style, and has been erected from the designs of Messrs. Mann & Saunders, architects, Westminster. The plan of the building is cruciform, and a substantial tower rises over the intersection of the chancel, nave, and transepts. The material used is Kentish ragstone (a considerable portion being taken from the old church), with Bath stone dressings. Internally there is a great deal of decorative work. At the east end is a reredos, made of pink alabaster, enclosing an *alto rilievo* of "The Last Supper," in white alabaster, which extends above the communion-table. The east window is in three-lights, between which run slender shafts of green marble. The lights of the window display "The Crucifixion" in the centre, with the figures of Mary and St. John on either side; and underneath each of the three principal designs is a lesser subject. The walls of the chancel, on which "The Lord's Prayer" and "The Decalogue" are placed, are decorated. This portion of the interior is the work of Messrs. Mayer & Co., of Munich and London, who have also provided the other windows of the church, which are all likewise of stained glass. The building of the church has been carried out by Mr. Allcorn, of Shipbourne, under the superintendence of the architects, who, it is mentioned, were assisted in the drawings by Mr. Pearsall. Mr. Andrews acted as clerk of works. The whole of the woodwork, including the fine roof of the nave, is of oak, and accommodation is provided for about 250 people. The masonry work was undertaken by Mr. Hughes, of Maidstone. The pavements, which throughout are of marble mosaic, were laid by Messrs. Burke & Co.; and Gregory's patent wood-block floor has been laid under the seats. *Sgraffito* decoration in the Early English style adorns the walls of the nave. The execution of this was entrusted to Messrs. Trollope; and carved ornamentation both in wood and stone has been effectively wrought in various parts of the building by Mr. Bromfield. The lighting of the church has been provided for by Messrs. Edmundson, by means of atmospheric gas; and the fittings are the work of Messrs. Richardson, Ellson, & Co., who have also supplied the lectern. A "Gurney" stove is used for warming purposes. The total sum expended amounts to about 15,000*l.* The organ, which cost 800*l.*, was the gift of Mrs. Marshall, and the clock-tower that of Mr. Thomson Hankey. The church, which stands on high ground in a beautiful district, replaces one rebuilt by Lord Barnard, at his own charge, in 1722.

Melksham.—The parish church of Melksham was re-opened on the 11th inst. after the completion of sundry improvements to the interior and the erection of a new organ. The alterations to the structure principally affect the chancel, and they have been executed by Messrs. Wall & Hunt, of Brimscombe, near Stroud, under the direction of Mr. Street, R.A. An entirely new ceiling of panelled oak has been provided for the chancel, and the walls of the chancel and chancel arches have been thoroughly cleaned. This latter work led to the discovery of some interesting work in the shape of portions of a Norman arcade running along a part of the north and south sides, with one pillar in the north-east angle. The entire cost of the alterations in the chancel has been borne by the lay rector (Lady Awdry) and the vicar of the parish (the Rev. Prebendary Warre). The new organ, which has been placed in what serves for the north transept, is the result of a fund commenced by the Rev. Dr. Wilkinson when he had charge of the parish, and which has since accumulated to 770*l.* The organ was built by the Messrs. Conacher, of Huddersfield.

Pulford.—On the 11th inst. the Duke of Westminster laid the foundation-stone of a new church at Pulford. The new building is being erected on the site of the old church, which has been recently pulled down. The latter had been some time in a dilapidated state, and the Rector (the Rev. J. R. Williams) having represented to his Grace on several occasions the condition of the church, the Duke, about last Christmas, signified his intention of causing a new church to be built. The work is expected to cost about 5,000*l.* The erection of the building is in the hands of Mr. J. Douglas, architect, of Chester, and Mr. Parker, builder, Eccleston.

Weeley, Essex.—The new church of this parish was consecrated on the 9th inst. It has been erected from the designs of Mr. E. C. Robins, by Messrs. Saunders & Son, at the cost of about 3,000*l.* The church consists of a nave and chancel, 80 ft. long, including walls, and 40 ft. wide, including the north aisle, which is 50 ft. long by 13 ft. wide internally, and is separated from the nave by an open arcade of three bays, sustained on stone octagonal piers, with moulded caps and bases. An organ-chamber is provided between the vestry and the chancel, opening to the chancel by two arches sustained on coupled and attached octagonal piers, with delicately-moulded caps and bases. A vestry, 16 ft. by 12 ft. 6 in., is provided. The northern entrance-door has an internal lobby enclosure, and an external open-timbered porch, enriched with cusped tracery to the heads of openings and to verge boards. The roof is covered with the old tiles as far as they would go, leaving the nave and porch to be covered with new tiles. The timbers of the roof, nave, and chancel are boarded on the inside between the trusses, and are panelled with raised mouldings. The chancel takes the form of a pointed vault, and the nave a multangular form approximating to a semicircle, the whole being stained and varnished. The aisle roof is open-timbered, sustained on trusses at intervals. The internal height of the nave is 33 ft., and the external, 40 ft., the chancel roof being 6 ft. lower. The internal width of the nave is 24 ft., and that of the chancel, 19 ft. The pitch-pine varnished chancel choir stalls are raised three steps above the nave, and the Communion-table five steps. The reredos is draped with tapestry, and an elegant embroidered cloth covers the table. The pulpit is of pitch pine, with open panels filled with cusped tracery, moulded coping, and angular shafts and caps and body, all sustained on a plain stone plinth. A similarly-designed pillar lectern is on the other side of the chancel. The benches are of deal, stained and varnished, and very comfortable. The old font has been restored and refixed, and the remains of an old piscina, found built up in the walls of the old structure, have been converted into a credence-table. With the exception of the boarded floor of the vestry, the whole of the church has been paved with wood blocks, laid on concrete to a simple pattern, by Mr. Gregory, of Clapham Junction. The chancel tiles were executed by Simpson, of London. The design of the building has been in keeping with that of the tower, which gave the key-note, and which belongs to the Perpendicular period.

VARIORUM.

"The Forcing Garden, or How to Grow Early Fruits, Flowers, and Vegetables," by Samuel Wood (Crosby Lockwood & Co.), is a little book containing a considerable amount of information. It professes to give "plans and estimates showing the best and most economical way of building glass houses, pits, and frames for the various classes"; but these are given so rudely that they are of much less value than they might be. Mr. Wood should have taken an architect into council. It is all very well to say that "a good gardener should be the architect of all glass and plant houses," but a man may be a very good gardener, and even know what should be done, and yet not be able to set it forth so that workmen could carry it into execution, and this is apparently Mr. Wood's case. Still, his book will be found useful.——The *Gardeners' Chronicle* for the 27th, which gives a full report of the International Horticultural Exhibition at Manchester, includes a double-page coloured plate, from a painting by Fitch, representing a group of orchids. It is exceedingly well executed; the modulation of whites and delicate pinks is capitally managed, and the result is a very pretty plate.——The August number of *Our Own Country* gives us a paragraph as to Old Houses in Hull:—"In Silver-street is the old White Hart Inn, and at the High-street end of Scale-lane is another curious house with a projecting front. Formerly this was one of the chief inns of Hull, under the sign of the King's Head, and it has more than once entertained royalty. At that time it extended backwards about a courtyard, round which ran a gallery on the first floor, as was the fashion in ancient hostels. This, however, has been removed, but the staircase which led to it still remains. There is another old house at the south end of the street, believed to have been the residence of the De la Pole family, and now belonging to the Charterhouse. This is a charity for aged persons, founded in 1384 by Sir Michael de la Pole; but the present building (in Charterhouse-lane) dates from the later part of the eighteenth century. The master's house was built during the Commonwealth. It shelters eighty-six pensioners, 'brethren and sisters,' to each of whom a chamber with stipend and allowances is allotted. In High-street is another house of rather more interest architecturally, but chiefly noted as the birthplace of William Wilberforce. It is a brick building in what may be called the Dutch style, and must be of a rather earlier date than it looks, as Charles I. is said to have been entertained within it by Sir John Lister."——A few hints from Cassell's *Family Magazine* for August, as to "Fire Insurance Policies," may serve as a useful reminder to some of our readers,—"It must be borne in mind that, by the printed conditions of the policy, the insurance company undertakes only to guarantee the insured against loss. No matter for what amount the insurance may be effected, the company will not, in the event of a loss, pay more than what may have been the actual value, at the time of the fire, of the goods destroyed. For instance, the cost of a new building would not be paid should an old building or one wanting repair be destroyed, nor would a half-worn-out carpet or article of furniture be replaced by a new one. In effect, the company says, 'You may insure your goods for any amount you like, but should a fire happen, you must give us as detailed an account as possible of the articles destroyed or damaged, showing their values at the time of the fire.' For his own guidance, the insured should therefore keep at least a rough inventory of his effects, and revise it from time to time. It is a curious fact that, even with the most careful, the preparation of such an inventory generally shows household furniture in particular to be under-insured, the total value being almost invariably underestimated. While an insurance on household goods, clothing, &c., effected by the head of a family includes the property of all those members habitually residing with him, it would not protect the goods of a lodger or visitor, or of any member of the family not customarily residing under his roof. Nor does it insure any of his own property stored in any premises other than those mentioned in the policy; and therefore, in the event of such an ordinary occurrence as a change of residence, notice should be given to the insuring company of the expected time and places of removal, in order that the property may be held secured by them against loss by fire in either house. Should any member of the family, too, be visiting at a friend's, and a fire happen there, the insurance would not cover the clothing and property while away from the place mentioned in the policy. All these contingencies can, however, be provided for by special insurances."——Mr. Edward Walford, in undertaking to revive the *Sacristy*, expresses his determination to make it, in the domain of Ecclesiology and Sacred Archæology in all its branches, as good of its kind as is the *Quarterly* or *Blackwood* in the class of subjects with which they deal. Church architecture is to be one of the chief matters treated of, and the new number now before us includes a communication on the original position of the high altar in Salisbury Cathedral, by Canon W. H. Jones, of Bradford-on-Avon; and an elaborate paper on the existence of a recognised model or type adopted in the erection of churches before the time of Constantine, by Mr. Geo. Gilbert Scott, M.A., both illustrated. It is but fair to mention that the *Sacristy* is a Roman Catholic organ.——The *Holiday Number of Belgravia* is full of bright, pleasant stories, with here and there a dash of mystery, or it would not belong to *Belgravia*.

An Anonymous Donor has presented the handsome sum of 3,000*l.* to the building fund of the Birmingham and Midland Institute.

Miscellanea.

Bold-street, Liverpool.—New premises for Messrs. Van Gruisen, music-sellers, have just been erected in this well-known thoroughfare. The *façade* is described as being in a free French Classic style, carried out in white Cefn stone from near Ruabon, North Wales, with pilasters and columns in polished Shap granite, with bands of dark grey Aberdeen granite and polished Chesterfield stone bases. The entrance, placed in the centre of the building, has recessed and splayed sides to the shop-front. The upper portion of the building is spanned by a large arch, having on each side of the springing life-sized figures of Euterpe and Thalia. The whole of the ornamental carving on the premises has been carried out in the endeavour to make it symbolical of the use of the building, there being violins, trumpets, panpipes, flutes, and a variety of musical instruments, both ancient and modern, in the panels of the pilasters, and on the main frieze of the building. The floors are connected together by means of a large hoist, supplied by Messrs. Bunnett, of London, which is found to be a great convenience for moving the pianos from floor to floor. The building covers an area of 450 square yards. The architects are Messrs. E. & H. Shelmerdine. Messrs. Bennett & Sons, of Victoria-street, have supplied the hot-water piping which is laid round each floor; Mr. Ludwig Oppenheimer, of Manchester, the mosaic tiling; Mr. Cassidy, of Westminster chambers, Dale-street, the grates and mantel-pieces; Messrs. J. Hands & Co., of Birmingham, and Mr. James Lee, of Great Charlotte-street, the lamps and gasfittings; and Mr. Abbott, of Lord-street, the wrought-iron grille and gates. The carving is by Messrs. Dodd, Williams, & Evans, of Liverpool; the masonry by Mr. William Wood; the show-cases and fittings by Mr. Chas. Christall; and the whole has been designed and superintended by Mr. Henry Shelmerdine.

Paperhanging on Damp Walls.—A mode of hanging paper on damp walls has been patented in Germany. Lining-paper, coated on one side with a solution of shellac in spirit of somewhat greater consistency than ordinary French polish, is hung with the side thus treated towards the damp wall. The paper-hanging is then proceeded with, in the usual way, with paste. Any other kind of resin easily soluble in spirit may be used in place of shellac. A layer of paper thus saturated with resin is said to be equally effectual in preventing the penetration of damp. It is not stated how long lining paper prepared in the manner described will adhere to a damp wall. As far as we are aware, French polish peels off moist surfaces, or is decomposed by damp. However, the suggestion with regard to the new process remains a matter for speculation, and experience alone will solve the question. For this reason, it is worth while, in our damp climate, to try the experiment.

Macfarlane's Castings.—We spoke incidentally in our last of the attention paid by Messrs. Macfarlane & Co., of Glasgow, to the provision of sightly public conveniences. It may be useful to mention that one section of their illustrated catalogue, "Sanitary Appliances," gives complete information on the subject. It may doubtless be obtained without difficulty by parish authorities and others concerned.

St. Pancras Schools.—Quarantine Wards. The Guardians of the parish of St. Pancras have instructed Mr. H. H. Bridgman, architect, to prepare drawings for quarantine wards for twenty children, in sections of five each, as sent down weekly from the workhouse. Each section sent down weekly will undergo three weeks' quarantine before entering the schools. The wards will be combined with a new entrance lodge.

An important Series of Excavations has been carried on of late at the spot where the capital of the Dacian kingdom and of the Roman province of Dacia once stood. The remains of a Mithras temple have been unearthed, together with several inscriptions bearing upon the Mithras cult, and a collection of Mithras sculpture.—*Athenæum.*

Growth of Eastbourne.—We are told that Mr. Thomas Verity, architect, is now at Eastbourne, with a view to the erection of some buildings which will be a great addition to this watering-place. A sum of money, amounting, we believe, to over 100,000*l.*, has been placed at his disposal by a syndicate of financiers.

Kirkstall.—The partial decoration of the parish church has been completed. The work is wholly mural, and mainly on the chancel walls, of which the decoration is on a diaper ground, interspersed with a few bands of relieving colour. Above a dossal hanging are entablatures of six figures, painted on a dead gold ground, but mainly in outline, slightly tinted. On the wall north and south of the east window are John the Baptist and St. Stephen; and the north and south chancel walls contain the figures of the Four Evangelists. Each figure is surmounted by a canopy. The work is by Messrs. Powell Brothers, of Leeds.

Architects in South America.—According to *Engineering*, the Government of the Argentine Republic has issued invitations for competitive designs for a palace for the legislative assemblies, to cost about 36,000*l.*; a Catholic cathedral, to cost 58,000*l.*; a Palais de Justice, 26,000*l.*; a Government building (Government offices?), 22,000*l.*; and an Hôtel de Ville, also to cost 22,000*l.* Each of these buildings is to stand upon a separate piece of ground, 328 ft. square, and be surrounded with streets about 70 ft. in width, so that they will be well seen from all sides.

Brentford Drainage Competition.—The Local Board, acting on the report of Captain Galton, R.E., to whom the sixteen plans submitted in competition were referred, have awarded the first premium to Messrs. Gotto & Beesley, of Westminster. The estimated cost of the selected scheme is 17,800*l.* It is proposed to deal with the sewage by chemical precipitation in tanks, to be constructed on land adjoining the Ealing sewage works.

Ventilation.—We hear that the "Imperial" self-acting exhaust ventilators (Weaver's patent), which have been recently taken up by the Sanitary Engineering and Ventilation Company, of Victoria-street, Westminster, are being applied to the Shoreditch Town-hall for the ventilation of the council chamber. The company's "Imperial" ventilating tubes are also being fitted there.

TENDERS

For the erection of a block of six sale shops, a wholesale wine and spirit store, and a suite of warehouse and business premises, Nottingham. Messrs. S. Dutton Walker & Howitt, architects:—

Woolf & Co.	£9,750 0 0
Dennett & Ingle	8,523 10 0
Jelley	8,400 0 0
Wheatley & Maule	8,295 0 0
Hind	8,287 0 0
Lynam	8,178 0 0
Fish & Son	8,150 0 0
Bell & Son	8,138 0 0
Hewitt	8,071 0 0
A. B. Clarke	7,900 0 0
H. Vicken, Nottingham (accepted)	7,795 0 0

For the erection of residence, Castlebar Estate, Ealing, for Mr. H. Vernon. Mr. Walter Graves, architect. Quantities by Mr. H. C. Pollard:—

Stimpson & Co.	£3,763 0 0
Adamson	3,733 0 0
Penny	3,600 0 0
A. G. Bolding	3,600 0 0
Nye	3,598 0 0
Toms	3,563 0 0
Ward & Lamble	3,457 0 0
Grover	3,444 0 0

For two houses and shops, with printing-office, at Ripley, near Derby, for Mr. G. C. Brittain. Mr. R. Argile, architect. Quantities supplied:—

Contract No. 1.—Brickwork, &c.

Potts, Crich	£707 17 6
Warren, Codnor	639 10 0
Clower, Ripley	610 0 0
Wetton, Ripley (accepted)	580 0 0

Contract No. 2.—Woodwork.

Jackson, Ripley	466 0 0
Bird, Pinxton	448 0 0
Clark, Ripley (accepted)	440 0 0

Contract No. 3.—Plumbing, &c.

Anthony, Ripley	249 0 0
Shaw, Riddings	248 9 0
Frost, Ripley (accepted)	223 1 8
Holland, Ripley	216 12 2

For stabling, &c., exclusive of fittings, at Pendell Court, near Merstham, for Sir Geo. MacLeay. Messrs. Medland & Powell, architects. Quantities by Mr. R. C. Gleed:—

Longley	£1,882 0 0
W. B. Downs	1,450 0 0
Geo. Punnett & Sons	1,448 0 0

For additions and repairs at 19, Ramsden-road, Balham, for the London and South-Western Banking Company. Mr. F. W. Porter, architect:—

Potterton	£213 0 0
Smith, Norwood	189 0 0

For alterations and fitting-up the Balham Coffee Tavern, for the Balham Coffee Taverns Company:—
Thomas Potterton, accepted.

For the erection of offices, for Mr. T. Lane. Mr. W. M. Holmes, architect:—

A. G. Bolding (accepted)	£3,645 0 0

For alterations and additions to Hume-street Board School, Sutton-common, Kidderminster, for the Kidderminster School Board. Mr. John Mossop, architect. Quantities by the architect:—

Harris	£470 0 0
Vale	450 0 0
Evans, Stourbridge	448 0 0
Price	440 0 0
Wridgway	409 0 0
Bale	407 0 0
Hitchman & Bennett	399 0 0
Binnian & Son	398 0 0
Thompson	390 0 0
Smith	387 0 0
Guest, Stourbridge	387 0 0
Howard & Sons *	350 0 0

* Recommended for acceptance.

For new lavatories, &c., at the Licensed Victuallers' Schools, Upper Kennington-lane. Mr. H. J. Newton, architect:—

Wood	£335 0 0
Cook	331 0 0
Beale	325 0 0
Vears	309 0 0
Pickersgill Bros.	249 0 0
Walker (accepted)	218 0 0

For alterations and re-seating to St. John's Church, Southall. Mr. E. J. Shrewsbury, architect:—

Hammond	£397 0 0
Woodbridge	330 0 0
Brown	288 10 0
Silver	286 0 0
Nye (accepted)	284 0 0

For works at Hayes Gate Farm, for Mr. W. Cotton. Messrs. P. D. Tuckett & Co., surveyors:—

Hollis	£1,447 0 0
Atkins	746 0 0
Nye	713 0 0
Hardy	697 0 0

For schools in connexion with St. Stephen's Church, Ealing. Mr. F. Ladds, architect:—

Gregory	£818 0 0
Adamson	837 0 0
Dorey	764 0 0
Nye	733 0 0

For fifteen cottages, at Ealing, for Mr. J. W. Tidy. Mr. Charles Jones, architect:—

Haynes	£2,850 0 0
Waters	2,665 0 0
Browning	2,490 0 0
Nye	2,212 0 0
Penny	2,145 0 0

For roads, gullies, and flags, for the Wanstead Board of Health:—

Mowlem & Co.	£359 0 0
J. J. Robson	330 0 0
Carter	330 0 0
G. J. Wood	312 10 0
G. H. Wyatt	299 0 0
John Taylor	250 0 0
J. Knight & Son	206 0 0
J. Rendell, Shacklewell (accepted)	190 0 0
G. Impey	176 15 0
John Richards	135 0 0

For new Catholic Church and Monastery, Bognor, for the Servite Monks. Messrs. Joseph A. Hansom & Son, architects. Quantities supplied by Mr. Henry Smith:—

R. C. Blaker, Worthing	£7,183 0 0
Chamberlain, Littlehampton	7,172 0 7
R. Marshall, Bognor	6,843 17 8
Stevens & Bastow, Bristol	6,969 0 0
E. Williams, Hampton Wick	5,917 0 0
Bromwich, Foster, & Co., Rugby	5,888 0 0
Charles Coles, Croydon	5,857 0 0
T. B. Hayter, Portsmouth	5,757 0 0
A. Smith, Bognor	5,475 0 0
D. C. Jones & Co., Gloucester	5,442 0 0
Charles Claridge, Banbury	5,320 0 0
George Huey, Dorset	5,143 8 0

Accepted for new dwelling-house and shop, Leyland, Preston, for Mr. John Whalley. Mr. David Grant, architect:—
Messrs. T. & J. Jackson, Leyland (brickwork).
Mr. Ed. Power, Leyland (stonework).
Mr. John Hunt, Leyland (plasterwork).
Mr. Thos. Cocker, Leyland (plumbing).
Mr. John Whalley, jun., Leyland (joiner's work).
Mr. John Heald, Chorley (ironwork).
Mr. Thos. Nickson, Preston (slating, &c.).
Mr. John Stones, Ulverston (revolving shutters).
Total amount of tenders, 616*l.*

For building a warehouse in Holly Bush Gardens, Bethnal-green, for Messrs. Warner & Rowe. Messrs. T. & W. Stone, architects:—

		Large roof.
Forrest	£326 0 0	£145 0 0
Edwards	295 0 0	105 0 0
Beale	285 0 0	94 10 0
Judd	236 0 0	92 0 0

For the erection of villa residence on the Wimbledon-park Estate, Wimbledon, for Mr. P. Warner. Mr. E. G. Wyatt, architect:—

Ward & Lamble (accepted)	£2,300 0 0

For stables, at Hyde-wood, Chislehurst, for Mr. Edward Milner. Mr. T. C. Sorby, architect. Quantities by Mr. Jno. Scott:—

Gregory, Clapham Junction	£689 0 0
Bowyer & Sons, Norwood	669 0 0
Amer, Forest-hill	660 0 0
Penfold, Sydenham	597 0 0

For building new smoking-room, lavatory, &c., at the Star and Garter Hotel, Kew Bridge, for Messrs. Fuller Smith, & Turner. Mr. W. Nunn, architect:—

Robinson	£300 0 0
Brunsden	281 0 0
Hunt	275 0 0
Lamble	269 0 0
Nye	267 10 0

For the erection of a villa residence, at Kersal, near Manchester. Messrs. Risley & Bibby, architects. Quantities by Mr. H. Stone:—

Davies & Mawdsley	£2,388	0	0
Barker	2,335	10	0
R. Wood	2,320	1	0
Parkinson	2,225	0	0
Statham & Sons	2,190	0	0
Southern & Sons	2,190	0	0
Webster	2,100	0	0
Jones & Co.	2,099	0	0
Napier	2,095	0	0
R. Neild & Sons	2,080	0	0
Maben	2,080	0	0
Warburton	2,075	0	0
Wilson, Toft, & Huntley	2,041	0	0
R. Whitell	2,000	0	0
Smith & Goodwin	1,998	0	0
J. Herd	1,997	0	0
E. Wood*	1,995	0	0

* Accepted, subject to revision.

For additional buildings at the Industrial School for Boys, Kingsnorth, near Ashford, Kent. Mr. F. W. Ruck, county surveyor:—

Steddy, Joy, & Steddy, Ashford	£8,148	0	0
Paramor & Son, Margate	7,740	0	0
G. H. Denne, Deal	7,359	0	0
Draper Fowler, Ashford	6,983	0	0
Wallis & Clements,* Maidstone	6,936	0	0
D. C. Jones & Co., Gloucester	6,960	0	0
G. Prebble, Folkestone (withdrawn)	6,800	0	0
A. Matthews, Dover	6,627	0	0
F. Vaughan, Maidstone	5,548	0	0

* Accepted.

For rebuilding Plough Bridge, Lewisham. Mr. F. W. Ruck, county surveyor:—

Mowlem & Co., London	£3,628	0	0
T. Lansbury, Bromley	3,492	0	0
S. Chafen, Rotherhithe	3,435	0	0
Acock & Co., London	3,394	11	11
Shaw & Co., London	3,195	0	0
W. Buxton, Herne Hill	2,936	0	0
F. Vaughan, Maidstone	2,745	0	0
Ball & Gammon,* Gillingham	2,715	10	0

* Accepted.

For residence, Newtown, Montgomeryshire, for Mr. E. Powell (stables not included). Messrs. Jones & Parke, architects. Quantities supplied by the architects:—

C. Davies, Newtown	£1,504	0	0
Morris & Sons, Newtown	1,491	0	0
E. Williams, Newtown (accepted)	1,342	0	0
Stables.			
E. Williams, Newtown	196	18	0

For alterations and additions to Primitive Methodist Chapel, Newtown, Montgomeryshire. Messrs. Jones & Parke, architects. Quantities not supplied:—

		Old Materials.	
Powell, Whitchurch	£700 0	£25	0
J. Williams, Newtown	630 0	15	0
E. Davies, Newtown	620 0	22	0
Morris & Sons, Newtown	530 0	—	
E. Williams, Newtown	530 0	15	0
E. C. Phillips, Newtown	530 0	22	0

For alterations and additions to premises, Newtown, Montgomeryshire, for Mr. E. Sibley. Quantities not supplied. Messrs. Jones & Parke, architects:—

J. Williams	£160	0	0
E. C. Phillips	137	10	0
Morris & Sons	98	0	0

For new Sunday Schools at Cottage-green, Camberwell, exclusive of heating, glazing, and seats. Mr. John Edward Sears, architect:—

Fredk. Higgs	£1,448	0	0
Wm. Smith	1,389	0	0
John Maraland (accepted)	1,215	0	0

For pulling down and rebuilding No. 22, Budge-row, Cannon-street. Mr. E. Evans Cronk, architect. Quantities supplied:—

J. O. Richardson,* Clapham	£3,129	0	0

* Accepted.

For one pair of villa residences on the Mount Pleasant Estate, New Malden, for Mr. John Wollstein. Mr. T. Lockwood Heward, architect. Quantities supplied:—

H. Thorn	£1,250	0	0
Geo. Norman	1,193	0	0
J. E. Sanders (accepted)	1,147	0	0

For work at No. 30, Gloucester-place, Portman-square:—

Hackforth	£2,101	0	0
Clark & Manooch	1,670	0	0
Smith	1,550	0	0
W. Phillips & Son	1,388	10	0

For external and internal painting, Clergy Orphan School, St. John's Wood. Mr. H. Winstanley, architect:—

W. Phillips & Son (accepted).

For new drill-hall and cottages, Wokingham, Berks, for Mr. A. F. Walter. Messrs. Brown & Albury, architects:—

Wescott (accepted)	£2,350	0	0

For new hotel, Blagrave-street, Reading, for Mr. Geo. Collins. Messrs. Brown & Albury, architects:—

Wernham (accepted)	£3,177	18	4
Plumber, Painter, and Glazier's Work.			
Moffatt	376	10	0

Accepted for new shop-front, Duke-street, Reading, for Messrs. Holbrook & Hall. Messrs. Brown & Albury, architects:—

Denton	£288	0	0
Shutters and Blinds.			
Haskins	61	9	10

For the erection of dwelling-house, alterations to business premises, &c., for the Trustees of the Great Stone Bridge, Edenbridge, Kent. Mr. M. Laurence Caley, architect:—

D. Goodwin	£975	0	0
Jordan	965	0	0
Head Bros.	930	0	0
Dives & Co.	902	0	0

For the erection of a small farm-house, at Ford Manor, Lingfield, Surrey, for Mr. J. Spender Clay. Portion of materials supplied. Mr. M. Lawrence Caley, architect:—

D. Goodwin	£875	0	0
Head Bros.	569	0	0
Dives & Co.	538	0	0
H. Ridley	390	10	0

TO CORRESPONDENTS.

The Late Mr. Harvey Eginton.—We have received information on the subject from Mr. George Truefitt.

W. P. B (no such statement has been made by us. The award in question was for "general excellence").—Hanson (if the employer orde ed plans, &c., the person who made them, whether a qualified architect or not, could recover an od soloress charge for them).—W. P. & Son (should send names and amounts).—E. C. G.—R. E.—A. G.—J. M.—E. A.—Bordian.—H. J. N.—S. P. S.—T. H. C.—sir J. A. P.—H.—E. H. L.—L. S.—M. P. B.—M. and L.—H. & Co.—Alpha.—R. & B.—M. & Co.—T. P.—F. W. E.—G. T. C.—J. P.—R. C. H.—H. W. B.—R. S.—J. C. & Son.—T. L. H.—A. G. B.—S. D. W.—M. V. & M.—Fairplay.—B. R.—S. R. L.—J. P.—G. & R.—P. P. & Co.—F. Bros.—T. C. S.—B. & A.—W. & L.—G. W. T.—A. S. J.—M. L. C.—D. G.—J. W. B.—T. S.

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